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ABSTRACT

Broad educational objectives and recommendations characterize this longrun planning report. Assuming that the goal of education is to help each child to realize his potential as a human being, producer, and citizen, the investigating committee recommended State legislation covering planning of and timetables for school integration, new teacher education programs, further studies of school organization and instruction, individualized instruction, a permanent educational inquiry system, improved educational financing, and a program to direct public attention to long-range requirements and approaches necessary to education improvement. Various tables and appendixes illustrate and clarify research findings and recommendations. (LIR)

A Report from the State Committee on Public Education to the California State Board of Education

041351

CITIZENS FOR THE 21ST CENTURY

Long-Range Considerations for California Elementary and Secondary Education

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STATE COMMITTEE ON PUBLIC EDUCATION, SACRAMENTO, 1969

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N-SG

Citizens for the 21ST Century

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State Committee on Public Education
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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State of California

STATE COMMITTEE ON PUBLIC EDUCATION

Claremont Hotel
Rooms 132-137
Berkeley 94705

Telephone 834-3460
Extension 661

May 23, 1968

Mr. Howard Day, President
State Board of Education
4640 Virginia Road
Long Beach, California 90807

Dear Mr. Day:

It is my pleasure to transmit to you the second and concluding portion of the report of the State Committee on Public Education. The things the Committee has to say about the public schools of California represent the collective judgment of a membership having diverse backgrounds and varied experiences in the professions and industries of our State. The Committee was appointed under a broad directive to determine what kinds of conditions are most likely to prevail in the California of the future and to reach some conclusions about the kind of education to best prepare our children to survive and prosper in that anticipated environment. The conclusions reached were those of informed lay citizens, who attempted to tap many sources of professional education knowledge and opinion in California and to take account of the concern of all citizens of the State for the improvement of education for their children.

Our report, therefore, is a mixture of lay and professional judgment. The recommendations should be regarded as broad principles for the growth and direction of public school education.

In the process of our studies to establish targets for the future, we have sought to inform the Board of our findings and recommendations and through our staff to maintain liaison with the State Department of Education and other interested organizations and groups. As the Board moves toward adoption of those of our recommendations which it considers helpful and significant, it will, however, take a great deal of work to develop the concrete steps toward these goals. This implementation effort will need the continuing attention of the Board, the Department, the Legislature, and the educational community.

The Committee of 24 was announced April 14, 1966. It has devoted long hours to its work and as personal situations changed several members were obliged to withdraw. Since its interim report of September, 1967, S. Clark Beise of Hillsborough, Mrs. Doris M. Dreyfuss of South Pasadena, Wesley I. Dumm of Pasadena, and John Green of Beverly Hills have resigned from the Committee. Others who continued as active members and who subscribe to this document are listed in Part One of our report. One exception should be noted: at the time this letter is written, Mr. George Johns is abroad and unavailable to endorse the report. He therefore is not to be held accountable for its contents. I should also point out that during 1966-67 Dr. Ronald Hunt served as Executive Secretary to the Committee, and since September, 1967, the professional staff has been directed by Charles S. Benson, an authority in the field of education economics, under whose leadership Part Two of the report was produced.

By submitting this report the State Committee on Public Education has completed the charge it received from you and requests that it now be discharged. The Board should consider the Committee's final recommendations concerning the organization and functioning of a Permanent System of Educational Inquiry, for we believe that there is a significant job to be done by a continuing organization.

With our thanks for the opportunity to serve, we are

Very sincerely,

F E Balderston

F. E. Balderston
Chairman

FEB:jjc

cc: Mrs. Leora Keaster
Assistant Secretary

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PART ONE

June, 1967

CHAPTER I

THE CHARGE TO THE COMMITTEE

The State Committee on Public Education, a group of concerned laymen, was asked by the California State Board of Education to think about "what girls and boys should be as a result of having gone to school" and to weigh how the state is succeeding toward that end and how it should best direct itself in the future.[1]

The Committee now proposes that the people of California consider some desirable directions of change, intended to equip young people to cope with whatever challenges and opportunities the decades ahead may bring. What is offered is essentially a philosophy of education for the future, which can be summed up as a plea for diversity, flexibility, and experiment.

Assumptions

The Committee in its deliberations assumed that the goal of education is to bring every child to realize his full potential, in these respects:

As a human being, to understand himself and the world around him, to know who he is and what he can become. Family, church, and the village mores were the classical shapers of the child, but today's fragmentation of life leaves more of this task to the schools.

As a producer, to contribute to a world of accelerating technology where skills in high demand today are obsolete on the morrow.

As a citizen, to shoulder the obligation of making wise, just, courageous decisions in his community, state, nation, world.

Findings

In the light of these assumptions, the State Committee on Public Education believes the future will require that:

Every child be brought to his highest capability to think independently, through command of basic skills and a sense of his own purpose, identity, and worth. Whatever role the individual is destined to play in society demands the ability to recognize problems and select means of solving them. Our educational system must strive to develop this skill from the moment of first encounter with the child.

Every child be assisted to gain his rightful place as a fully participating member of society.

The school should look upon each pupil as a person of unique distinction, possessing every right to grow and no obligation to be fitted to a mold. Let the schools concentrate on the heart of the matter, which is training pupils to think for themselves.

Footnote

[1] See Appendix A for text of the charge to the Committee.

CHAPTER II

RECOMMENDATIONS

Therefore, SCPE recommends that the State Board of Education, in collaboration with the Governor and the Legislature, take these first steps toward new directions for the public schools:

1. Seek legislation that will give the State Board of Education the authority (a) to obtain from each school district its plan for racial, ethnic, and socio-economic integration and (b) to set a timetable for the achievement of the plan.

2. Encourage colleges and universities to reconstruct their programs for preparation of teachers according to the best judgment of the institution, in partnership with appropriate school districts in whose classrooms much of the training would take place. The Board of Education should be empowered to suspend credential requirements for graduates of those institutions submitting acceptable plans. This recommendation aims at training teachers in a variety of ways to match those diverse demands the future is expected to impose upon them.

3. Establish (a) a series of laboratory schools with the mission to develop and appraise new methods of organization and instruction, and (b) a state network of demonstration schools to illustrate new methods, especially those coming from the laboratories. These schools should serve a variety of educational environments and, particularly, every urban slum should have a laboratory school and at least one demonstration school.

4. Create a permanent system for educational inquiry to inform the profession, legislators and other decision-makers, and the public about the state of the schools. Long-range forecasting and planning, identification of needs and the assessment of how well needs are being met should be among its functions.

5. Consider the need to direct public attention to those long-range requirements and approaches which show promise of improving education. The establishment of new kinds of schools and the development of new teacher training methods may confuse a concerned public unless the reasons are understood. The State Board of Education and other agencies should consider arranging local conferences where citizens and officials can examine the proposed changes and develop techniques for constructive involvement of the public.

Intensive examination of economic resources for education is proposed by the Committee for the coming year. The problem centers on: how best the state's economic resources can be allocated to education; the efficiency with which the educational investment is administered; and long-range estimates of financial needs of education.

These studies of resource allocation will be tied in with the design study for an educational inquiry system.

SCPE recommendations are experimental in spirit. A diversity of approaches is suggested. Those that succeed will point the way to other needs, and to other areas of trials and development.

In later sections of this report, evidence and argument for these findings and recommendations are presented.

CHAPTER III

SURVIVAL IN A TECHNOLOGICAL SOCIETY

Demographers estimate that in 1980 the United States will have a population of 226 million, or as many as 279 million; that it will require a labor force of 98 million, or as many as 109 million; and that the annual output per worker will be $9,800 or as much as $11,500.[1]

The test of such projections rests not so much on their accuracy as upon whether or not they helped in the making of wiser decisions. Therefore forecasting must be a continuous effort, in which estimates are revised as the future unfolds.

More conservative analysts think that the replacement of men by machines does not mean less demand for manpower. They argue that humans will be freed from rote for more intellectual endeavor, and that there will be a substantial demand for skills in rebuilding our cities and transport systems and fighting poverty. Surplus productive time will be diverted to the expanding fields for new goods, they believe. As people are freed from poverty and seek to satisfy presently unfulfilled longings, the demand will follow not only for more goods and services but for more sophisticated, higher quality, and richer ways of life. Producers of goods to supply these demands will need more skills and more education.

Whether low or high estimates are more nearly right will require five or ten years to determine--time in which war or a scientific breakthrough may leave predictions far wide of the mark. These are the uncertainties that plague planners. They do not, however, diminish the need for planning.

"Perhaps the most important conclusion which emerges from this discussion for the educational system is that it should plan for surprise," observes one scholar in a review of educational implications of the future.[2]

The evidence at this point suggests that nearly all occupations will require increasing years and quality of education. U.S. Department of Labor statistics show that service workers, craftsmen, and other non-farm workers averaged approximately nine years of schooling in 1952. In 1965 the average was 11 years. In the same time professional and management workers increased from 13 years' schooling to 14. Farm workers increased very slightly, from eight years to a little above eight. Unemployment rates of those having less than a high school education are high, and rising. We see no indication that this trend will moderate. Distinct from these is the problem of matching quality of educational background to job requirements. This is a separate issue.

Accompanying these forecasts of real income and the composition of the work force, we also observe trends in urbanization.

During the flow toward urban areas in the 50's and 60's, it was actually the suburbs surrounding the old central cities which had the greater population increases. Census figures for 1960 showed that the population of that portion of metropolitan areas outside the central cities increased 48.5 percent while the central cities themselves increased 10.8 percent. Furthermore, those population increases in the central city were virtually all Negro, or in California, Negroes and persons with Spanish surnames.

From 1960 to 1980 elementary school enrollment is expected to increase 22.7 percent, a manageable 1 percent per year.[3] During the same time, high school enrollment is expected to increase 53 percent, or 2 1/2 percent a year.

But these enrollment projections ignore the effect of developing technology and changing work habits. There is a belief among labor economists that the development of new jobs and the displacement of old ones mean much retraining of workers. The typical worker will require retraining several times in a lifetime.

Present enrollment in California public higher education gives some clues to these future pressures. As reported by the Coordinating Council for Higher Education in April, 1967, the total enrollment in state universities, colleges, and junior colleges was then 744,000, of which 40 percent, or 320,000, represented part-time enrollment.

The Coordinating Council reported that while it does not have specific information, it feels reasonably certain that a good share of the part-time students are persons retraining or refreshing skills as distinguished from those pursuing degrees. The figures do not include those enrolled in extension courses.

One population projection holds that by the year 2000, California will count 50 million residents, most of them concentrated in a great metropole sweeping from the San Francisco Bay Area south to the state's border.

The individuals who make decisions about the water, land, and air for it will require a great deal of training. Schools will be asked to do more to help citizens understand the urban scene.

The anticipated 50 million Californians can be expected to be confronted with twin ailments of the lonely crowd--loneliness in the packaged space wherein individuals will work and live, abrasiveness when they leave the capsule to encounter the crowded world outside.

The changing technology logically will leave in its wake a changing social organization. Its direction cannot be perceived, but in magnitude it is likely to be as formidable as the flight from the farm to the city in recent decades.

Predictably there will come a yearning for greater personal enlightenment, artistic expression through the arts and crafts, the fulfillments of literature, music, and what remains of the splendor of nature. There is evidence which suggests that the expression of personality through the arts and the tactile pleasure of work with the hands will require a place in the curriculum approaching the demands of language and mathematics as tools of thought.

The problem for those who examine the future is: how can children be prepared to survive and to support our nation amid the challenges which can be seen, if only dimly, in the decades ahead?

Footnotes

[1] Prospective Changes in Society by 1980, cited among References in the Appendix, is a valuable approach to issues discussed in this chapter. Articles on "Population Trends--Prologue for Educational Programs" by Philip M. Hauser and Martin Taitel; and "Prospective Economic Developments" by Gerhard Colm touch on key problems. "Expecting the Unexpected," by Kenneth E. Boulding, is a valuable examination of predicting change and the implications for education.

[2] Boulding, op. cit., page 211.

[3] Bureau of the Census, "Projections of School and College Enrollment in the U.S. to 1985," Current Population Reports, Series P-25, No. 338, May 31, 1966.

CHAPTER IV

THE INDISPENSABLE SKILL

Since we are sure that the future will be surprising, it is impossible to select from the arts and crafts all those special skills or pieces of knowledge our children will need. The "knowledge explosion" has speeded up the obsolescence rate of skills and learning. If education is regarded as putting facts into a basket which the child brings with him to school, it will fail.

This year's first grader, who will be a mature decision maker in the 21st Century, must be skilled in observing, analyzing, communicating. He must be ready to meet new situations and be able to adapt to change.

In short, his education should center around the ability to solve problems. It should teach him how to learn through exploration, testing, discovery by himself.[1] Since so many persons will change occupations several times in their lives and will be called upon to learn more difficult skills, education can be expected to be a lifetime business. Individuals had best attain the intellectual tools and the responsibility to direct their own learning program at an early age.

What is needed to help with this task are teachers prepared through methods which emphasize learning how to learn and the different ways in which children approach that objective. The teacher should be well trained to begin with, but he cannot continue to be well prepared unless he renews his training on the job throughout his professional career, and unless he is supported by every tool available to education.

The position expounded here is similar to that of the National Commission on Technology, Automation, and Economic Progress, which contends that the fundamental requirements for motivation to learn is freedom to learn.

"As an individual matures he should have increasing freedom to choose from every type of educational opportunity," the Commission's report says, and it adds that the pace of technological change requires continued reeducation through the life span.[2]

Children come to school with vast differences and proceed at widely varying rates of growth, and the school system has an obligation to provide flexibility and diversity for them.

These differences extend through all socio-economic levels. When the school system ignores them, it contributes to the causes of academic failure.

Research into the particular education troubles of children of the poor and from racial minorities, while not definitive, suggests such pupils suffer by having imposed upon them a standardized process designed for children of mid-income families. Often enough, it fails even for these latter, because of its inflexibility.

It is quite feasible to prepare teachers to assume attitudes and possess techniques that will exploit the child's initial eagerness to learn. Children from all backgrounds will thrive on individualized instruction and the continued sympathetic interest of teachers and administrators.

A Mood for Change

It is SCPE's judgment that California is at a point in time where radical redirection of public education must be started. It will take years to train teachers and prepare teaching situations to match the needs of the future.

Children are poorly served by perpetuation of the rigidities of the past at a time when a rapidly moving present and a quite uncertain future argue for flexibility.

School malfunctions can be explained as socio-political--the hesitancy of the political society in which the school functions to adjust to the mobility and complexity of contemporary life, the acceleration of technology, and the population thrust toward urban living.

The rigidities, dating from our early statehood, are of a piece with regulation of the public schools generally in the United States. They frustrate the efforts of innovators and will be shockingly out of date if allowed to continue in the decades ahead. SCPE's proposals aim to cut the educational system free of them.

If the restraints can be removed and colleges and universities are stimulated to devise more successful strategies of attracting teacher candidates and training them, if teachers prepared under these strategies are allowed to operate according to their best professional judgment, a diversity of educational experiences will result.

This diversity is best calculated to fill the needs of the pluralistic society, and the manifold wants and conditions that can be anticipated.

A start toward that desirable diversity is found in the principles of the reorganization of Division 7 of the Education Code sought from the Legislature this year by the Board of Education.[3] SCPE's findings support that attempt as an improvement but the Committee advocates even greater encouragement to schools to innovate.

This position also agrees with that of the Arthur D. Little, Inc., examination of the State Department of Education, which holds that educational needs cannot be served by a single curriculum common to all students. At every level, pre-school to adult retraining, special attention to the needs of individuals, including their need for vocational training, is advisable.

An appreciation of the problems and opportunities inherent in the culturally and industrially sophisticated California of the future should be part of the general education of all children.

Since most parents expect schools to instill certain competencies, it might be well for educators to define those competencies explicitly.

The child should be aware of these expectations, and should prepare himself to demonstrate his proficiency some time in his school career.

Increasingly, however, students, under competent guidance counsel, should be asked to define their own learning goals and be assisted to acquire intellectual independence by formulating and conducting their own lines of inquiry.

Repeatedly, California college professors interrogated by SCPE complained of the rigid thought processes they observed among young people. They said too often students in place of thinking for themselves had learned to regurgitate statements believed to be safe answers. The professors holding these views expressed them in these words:

> Students expect us to provide them with the solution instead of ferreting it out for themselves, or even to provide a solution when no satisfactory one is known. At the age of 18 they are locked in by their ideas like old men, refusing to consider that more than one way may be the right way, or even the possibility that more ways of life than our own may be "right" for other peoples.

SCPE investigators got similar reactions from a small sampling of high school student government leaders. The young people emphasized the importance of problem analysis and a search for solutions.

What is needed is more attention to "discovery methods" of teaching inherent in the newer concepts of physical science courses in our high schools. (The Committee is reminded that "discovery methods" long have been discovered, notably in the scientific method of Francis Bacon--1626.) A caution is supplied by critics who complain that often current versions of the method bind students to "discover" only certain desired results.

"Discovery" teaching--that is, allowing pupils to infer conclusions from observed evidence--should start in the earliest grades. SCPE consultants do not find it sufficiently in practice there at this time.

College professors questioned by SCPE unfailingly expressed sympathy for the public school teachers and their burdens. They consider that the best of present day public school graduates are superior to those of other generations. Nevertheless, they insist that there must be improvements, that the standards must go even higher to match the needs of the future.

Not unexpectedly, they called for mastery of English and mathematics as tools of thought. But also, they called for the kind of educational experience discussed in this report--the kind leading to heightened powers of analysis, of drawing conclusions, the ability to work independently. They believe too few students learn how to learn in elementary and secondary school.

With the call for mastery of tools of thought came admonitions against too narrow a course of study. Pure scientists and medical men particularly cautioned that there is a need to study the humanities. A biochemist quoted Darwin:

> My mind seems to have become a machine for grinding out general laws out of large collections of facts...if I had my life to live over again I would have made a rule to read some poetry and listen to some music at least once a week; for perhaps parts of my brain now atrophied could thus have been kept active through use. The loss of these tastes is a loss of happiness, and may possibly be injurious to the intellect, and more probably to the moral character, by enfeebling the emotional part of our nature.

These scholars said that perhaps of more worth than science courses for those bound for non-science careers would be courses in biology and social issues, directed to studies of conservation, pollution, and population control. It was their view that if all students were made aware of the suicidal nature of many current public enterprises affecting environment, they would be better prepared to make decisions on social issues.

Some decision makers may be unaware of powerful developmental forces now at work in American education. These cut across disciplines and levels of authority in new experimental relationships. Something that might be styled "big education" is coming from this. Publishers, educational entrepreneurs, federally supported laboratories, and private or semi-public institutions are pushing forward with techniques, materials, curricula. Their roles and impact are not fully apparent, yet, but they will make it more difficult for schools to keep the status quo.

Among these forces is the increasing interest of industry in the organization and conduct of public school systems for profit. The direction is already evident in the operation of the Job Corps centers by private firms. The possibility stands that if the public school system does not revitalize itself, forward-looking communities will seek to turn to industry, which presumably will be able to design, install, and operate a complete educational system for a fee. Whether this is desirable or not remains for the public to decide.

It is with this background of present and future instructional needs in mind that SCPE offers its recommendations for experiment leading to reform.

Footnotes

[1] The position paper on Instruction prepared for SCPE by John I. Goodlad (unpublished) contains an exposition of the "problem solving" approach.

[2] National Commission on Technology, Automation, and Economic Progress, Educational Implications of Technological Change, IV-67, U.S. Government Printing Office, February, 1966.

[3] Division 7, dealing with curriculum, prescribes the instructional requirements of elementary and secondary schools.

CHAPTER V

EQUAL OPPORTUNITY IN EDUCATION

SCPE Recommendation--Seek legislation that will give the State Board of Education authority (a) to obtain from each school district its plan for racial, ethnic, and socio-economic integration and (b) to set a timetable for the achievement of the plan.

The Legal and Moral Position

To provide equal opportunity in education, in every sense, is the most difficult and urgent task that our schools face and will continue to face for at least the next generation. In the current context, equal education divides into two related but also distinct issues: integration (racial, ethnic, and socio-economic) and compensatory education.

It is pertinent to state the constitutional and moral imperatives of equal education. Long before 1954 it was a national principle that no child should be deprived of equal education by reason of race, color or creed. But many states had restrictive laws; there were differences in the resources available to local districts; there were enforced attendance patterns which separated the children of the poor and of minority races from other students; and local attitudes were often prejudicial to the actual provision of equal education.

The U.S. Supreme Court, in 1954, held that systematic segregation produced inherently unequal education. That and subsequent Federal and State court decisions have placed increasingly specific demands upon school systems to plan for integration and to carry out such plans as quickly as possible.

The constitutional demand for positive steps toward integration of the schools is therefore abundantly clear. The State Board of Education, in its consideration of school districting plans, has specified standards to evaluate whether these plans promote integration of the schools.

The moral and legal basis for compensatory education is equally clear, in the specific sense that in instance after instance it has been found socially desirable to modify the content of educational programs for special groups of children. For children with disabilities and educational handicaps (normally not related to race or social origin) it is traditional to spend more per student year than is spent on each child who does not have these disabilities to overcome.

A special effort to overcome a child's educational handicap, whatever the source of the difficulty, is warranted if it can be shown that the child's educational achievement will improve by enough, in terms of society's criteria, to justify the cost of the improved program.

These two elements of equal educational opportunity do interact with each other, but the problems of defining policy alternatives and of evaluating practical steps toward these objectives are somewhat different in respect to integration than in connection with compensatory education programs.

Integration

Community by community within California, the present situation varies in the racial, ethnic and socio-economic composition of the community and in the degree of integration of the schools so far achieved. Each major metropolitan area contains not one but a series of school districts. The achievable degree of integration within the present political jurisdiction of each school district depends on its present residence pattern, and on future changes of residence patterns both within and across school district boundaries.

The Committee believes that the State Board of Education should seek legislation empowering it to obtain from each school district an acceptable timetable of its plans to achieve integration. The Board should also be empowered to take steps to assure that each district holds to its timetable. Pending such legislation the Board should continue its persuasive efforts to focus the attention of school districts and the public on steps toward integration.

There is a variety of mechanisms for assisting in the formulation of these integration policies and timetables and for promoting their success. In some instances, county committees work with school districts within the county and bring forward plans for vote in the districts. The Commission on Equal Opportunities in Education and the Bureau of Intergroup Relations have been successful, when called upon, in assisting a number of districts. In many districts, citizens' committees and master planning groups, involving school administrators, teachers, and community leaders, have helped to define approaches to improved integration patterns in the schools and to lay the basis for public acceptance of good plans.

The racial, ethnic, and socio-economic composition of a district's school population and its geographical residence patterns define the scope of that district's integration problem. There are many possible elements of integration plans, and a plan that is most appropriate for one community may not involve the same mix of these elements as would be best for some other district.

The state of opinion and attitude among the various groups in the district provides a measure of the initial support for, or resistance to, integration plans.

The public response to an integration plan is crucial. Within the district, the public may become more willing or less willing than before to support the schools, financially and otherwise, depending upon whether the plan adopted is seen as the right thing to do. Within large school districts, housing areas are subject to change over time in their racial composition, for a wide variety of reasons. A plan intended to achieve greater integration may have only temporary effects because of these underlying changes in housing patterns. More significant than changes within the district in housing patterns is the sub-urbanization process.

The most acute problems of racial imbalance exist in the old central cities of the metropolitan areas. Out-migration of middle-class whites to the surrounding suburbs has been taking place for a long time together with in-migration by minority group members into these central city areas. To have actual integrating effects over a significant time interval, integration plans and programs need to be conceived in such a manner as to evoke positive response and support for the schools and their effectiveness by all of the major groups affected. This makes it especially important to achieve good education and good educational results in integrated schools.

It is clearly not enough to seek to modify the racial, ethnic, and socio-economic composition of each school. Rather, the schools themselves often need to be modified in structure and practice in order to capitalize on the educational opportunities resulting from integration and to meet the educational needs of students in the integrated situation. Desegregation of the schools therefore needs to be accompanied by positive steps toward effective education in the integrated school.

Integrated schools need to meet and pass the acid test--namely, maintenance or improvement of the quality of education for all the children who attend them. The State Committee on Public Education believes that its other recommendations will have special pertinence to integrated schools.

Compensatory Education

The State Committee has received ample evidence of the fact that school children have differing educational needs. California has a considerable tradition of special educational efforts for the blind, the deaf, the emotionally and physically handicapped, and the educable mentally retarded.

Only recently, however, have California school districts begun to receive money--both from Federal and State sources--to assist them in providing special educational assistance to children with educational handicaps stemming from their cultural and socio-economic backgrounds.

A few examples of the nature of these problems will suffice:

> Children from families in which the parents have had little education first come to school with a great deal less prior exposure to verbal stimuli, to reading, and to concept formation than children whose parents are highly educated. These children have an initial handicap in beginning to learn to read. If they do not receive special help, many of them fall behind in reading at an early stage and their performance is likely to suffer seriously throughout the years of compulsory schooling, not only in English but in all academic subjects.
>
> Children may arrive in ghetto schools with previously undetected and untreated illnesses, physical handicaps or emotional difficulties. Only if these health problems are dealt with immediately and intensively will those children be able to make good progress in school.
>
> Children who come to school from households where Spanish is the everyday language face problems of reading, speaking and writing English and of receiving English-language instruction in other subjects. These children need intensive instruction in English. They may need to have English taught them as a partial foreign language. They may need Spanish-language instruction in other subjects for at least a part of their other schooling.
>
> Children in ghetto schools often have acute and early knowledge of many aspects of life from which middle-class children are shielded. At the same time they are likely not to have had exposure to the wider world--of bridges, plays and concerts, department stores, museums, farms, forests, National Parks--on which education for the dominant culture of America depends. When it does not take place in the family, exposure to these things becomes a needed part of the school program.

Cultural difference is not at all new to American education. Indeed, during and since the many waves of immigration in the 19th and early 20th centuries, we have relied on schools and jobs as the two great forces toward assimilation and Americanization of millions of people.

What we see now are new aspects of cultural difference which lend far greater urgency to our reliance on education:

If formal education is not stimulating and successful for the young, contemporary industrial society has few unskilled, muscle jobs available to them when they are old enough for full-time work.

The large ethnic minority of school children having Spanish names--mostly Mexican-Americans--face some of the problems of previous large groups of European immigrants, but added to these are differences in aspiration and perspective.

The large Negro minority faces the social insult of racial prejudice and discrimination, in addition to the other problems of poor parental education, poverty, unstable family structure, and blunted aspirations which would be hard enough to overcome even if race were not an issue.

Because the rest of American and Californian society is continuing to improve in its already comfortable condition of life, there is heightened bitterness and increased feeling of penalty for those who feel that they do not share fully in the opportunities and the gains.

These things add up to the powerful feeling that the processes of education and assimilation, which in the past have taken two or three generations, would now be intolerably slow.

Even while strenuous efforts are made toward integration as one approach to improvement, it is also necessary to focus resources and urgent attention on compensatory programs.

Evidence so far available indicates that schools integrated across racial, ethnic, and socio-economic lines provide much-needed stimulus to those children who suffer educational handicaps. Realistically, we must also expect that in the big cities, schools with a high proportion of minority-group attendance will be with us for a long time. If the easier path of educational stimulus through integration is not available, then it is necessary to deliver high-performance education in the ghetto schools. If it is alleged that this is costly, then we must look at the appalling cost of failing to do it.[1]

The State Committee believes that the demand for sweeping improvement of the school achievement of disadvantaged children can be met. This is a statement of faith in the experimental approaches to education that we recommend; and of urgent priority--that resources be provided to make first-class education a reality for every school child in California.

Footnote

[1] Memorandum of Comment, Reservation, or Dissent by Dr. Geraldine Woods: The delivery of "high-performance education in the ghetto schools" should not be viewed as an "either-or" alternative to speedy integration. The facilities, counseling, and teachers in these schools should be improved immediately. This should begin as we are passing the necessary legislation, making plans, etc., to integrate our schools, since this latter will take time. Then, too, if the ghetto schools excel, the process of integration will be assisted as the schools and students will be able to move into the program without an excessive lag in many areas, thus making the process of integration in our schools more effective.

CHAPTER VI

THE TEACHER

SCPE Recommendation--Encourage colleges and universities to reconstruct their programs for the preparation of teachers according to the best judgment of the institution, in partnership with appropriate school districts in whose classrooms much of the training would take place. The Board should be empowered to suspend credential requirements for graduates of those institutions submitting acceptable plans. This recommendation aims to train teachers in a variety of ways to match those diverse demands the future is expected to impose upon them.

Training

Observations in the classroom suggest that in California as generally in other states, the teaching process is marked by much talking, with the teacher telling or questioning. Although teachers are warm toward their pupils and attempt to establish a positive learning atmosphere, the attempt is dulled by the emphasis on telling. There is scant variety of techniques and material and little evidence of attention to differences among the pupils. The single teacher in the classroom is too rushed to give individual instruction, and opportunities for her continued in-service training may be lacking.[1]

Pupil-to-pupil learning, independent learning, freedom of choice and movement are negligible beyond kindergarten. Film strips, tapes, programmed learning are used too little. Curriculum tends to be fixed. The arts suffer from neglect in favor of "skill" subjects.

High school students use independent study methods with difficulty, their teachers report. One reason is that they are seldom exposed to the technique in grade schools.

Teachers may appear to be dedicated and are likely to believe that they are promoting the best kinds of self-propelled inquiry and discovery-based learning. The conclusion is that they have not been trained adequately in modern methods, or that something in the school environment inhibits their performance.

These perceptions are the basis for our recommendation of a reconstructed teacher training curriculum.

What is intended here is the uprooting of the present college curriculum and its redesign to match the demands upon teachers in the elementary and high schools.

Those colleges and universities willing to join this experiment should receive financial help, as needed for costs of development. Credential requirements for their students should be waived. The course of study should require at least five and not more than seven years, and the student should be assigned as a classroom aide to a nearby cooperating school at an early stage of the program. He would be paid.

Courses introductory to the teaching process should experiment with analysis of films showing actual teaching and video-tapes of the student's own teaching. This would permit study of the teaching process in depth and without the complication of taking college classes to the schools for this purpose.

A good part of the curriculum would involve classrooms in cooperating schools, in which the candidate would serve a residency, accepting, as he moved through the program, greater responsibility at greater pay. Practicing teachers who work with the student teachers should receive appointments as clinical personnel on the education school faculties. The state should make sure that the proper capabilities and facilities exist in the cooperating schools.

At the end of his training, the candidate should be inducted into the teaching profession by his colleagues, and should thereafter be entitled to the rights and responsibilities of that station.

His training would not end but his techniques and subject matter knowledge would be renewed throughout his career.

Teachers should be offered employment throughout the year, with appropriate additional pay. More of their time would be devoted to retraining and to individual and faculty group planning of courses. Teachers must have time for self-renewal. SCPE invites attention to the thinking of educational statesman James B. Conant on these matters. He has proposed a number of canons for the preparation of teachers. None disagrees with SCPE's recommendations, but three are especially to the point. To quote Dr. Conant:

> For certification purposes the state should require only (a) that a candidate hold a baccalaureate degree from a legitimate college or university, (b) that he submit evidence of having successfully performed as a student teacher under the direction of college and public school personnel in whom the State Department (of Education) has confidence, and in a practice-teaching situation of which the State Department approves, and (c) that he hold a specially endorsed teaching certificate from a college or university which, in issuing the official document, attests that the institution as a whole considers the person adequately prepared to teach in a designated field and grade level.[2]

The key phrase in this recommendation is "attests that the institution as a whole considers." This puts the burden of preparing teachers squarely upon the assembled faculties of the institution, and should reassure those critics who suspect that schools of education per se are not to be trusted with the teacher preparation enterprise.

The second recommendation from Dr. Conant:

> Each college or university should be permitted to develop in detail whatever program of teacher education it considers most desirable, subject only to two conditions: first, the president of the institution in behalf of the entire faculty involved--academic as well as professional--certifies that the candidate is adequately prepared to teach on a specific level or in specific fields, and second, the institution establishes in conjunction with a public school system a state-approved practice teaching arrangement.[3]

Expanding on this recommendation, Dr. Conant noted that it would involve a contract between college and public school systems. He added his belief that local districts had not yet assumed the responsibility they ought to have for the introduction of teachers into service during a probationary period.

The third of Dr. Conant's recommendations:

Public school systems that enter into contracts with a college or university for practice teaching should designate, as classroom teachers working with practice teaching, only those persons in whose competence as teachers, leaders, and evaluators they have the highest confidence, and should give such persons encouragement by reducing their work loads and raising their salaries.[4]

SCPE is impressed with the possibilities for teacher training experimentation existing in Section 13187. 5 of the Education Code. This permits the Board of Education to make exceptions from credential requirements for applicants who have participated in experimental programs the Board of Education regards as being of merit. We are informed by the Bureau of Teacher Education and Certification that only two small experimental programs are under way, and that as of April, 1967, no candidates have applied for credentials.

Recruiting Talent

It is a most basic need to find, train, keep, and support as teachers the best available talent among the young people of the community. This can only partly be achieved through the offer of more money.

Teachers must attain greater rank in the community. This can be achieved through greater responsibility. They must be summoned to use their expertise to a greater degree in shaping educational policy.

The Committee invites attention to the report of the Citizens Advisory Commission to the Joint Legislative Committee on Education in 1960. That commission submitted a total of 129 recommendations, plus 42 recommendations in a minority report.

It is noteworthy that above all else, the commission asked that:

Classroom teachers have a major voice in the defining of objectives, in determining the content of courses and curricula, and in the selection of textbooks.[5]

That commission urged the Legislature to permit release of teachers to conduct research into educational problems and publish their findings to be distributed by the State Board of Education.

Although such freedom has not come their way, teachers are still hearing encouraging noises from lawmakers. The National Conference of State Legislators in Washington, D. C., last December, for example, heard pleas that the teacher be freed from irrelevant education courses, from rigid certification requirements, and from the stultifying "box" of the classroom.

Participants in that conference charged that the educational system stifles creativity and promotes conformity. Participation of classroom teachers in decision-making was described as a major need.[6]

The teachers' organizations have served notice that they aim to make a fight for decision-making involvement. The public may shortly be confronted with the alternative of yielding to that pressure in a sort of defense in depth, or it can turn the aspirations of teachers to positive value by making them part of the accepted organization of the school and encouraging teachers to prepare themselves for the responsibility.

To help the best teachers rise toward the top--as teachers, not administrators—differentiated pay scales should be considered, but the scale must bear scrutiny to prevent its use as a cover for sub-standard personnel.

The experiments with a graduated scale at Temple City, California, the use of several devices to achieve similar ends in the city schools of San Diego and another variation of a graduated pay scale appear in Appendix C.

Footnotes

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[1] See Goodlad, op. cit., Chapter IV, "Instruction in Our Schools," for an account of these observations.

[2] Conant, James Bryant, The Education of American Teachers, pp. 60-63.

[3] Ibid.

[4] Ibid.

[5] Report of the Joint Interim Committee on the Public Education System, Senate of the State of California, 1961, p. 18, ff.

[6] National Committee for Support of the Public Schools, "Improving the Quality of Teaching in the Schools," Proceedings of the National Conference of State Legislators, 1967, pp. 64-66.

CHAPTER VII

THE SCHOOLS

SCPE Recommendation--Establish (a) a series of laboratory schools with the mission to develop and appraise new methods of organization and instruction, and (b) a state network of demonstration schools to illustrate new methods, especially those coming from the laboratories. These schools should serve a variety of educational environments and, particularly, every urban slum should have a laboratory school and at least one demonstration school.

Laboratory schools existing today are laboratories in name only, and were designed to serve teacher training ends. Places for testing on the frontiers are needed. The labs should be new from the ground up, and they must be free to try, to inquire, innovate, research. Therefore, they must be free from regulations inhibiting those functions. This also means that the maximum use of new devices, methods, theories should be employed, the results assayed, and findings circulated widely. We must learn what happens to students and teachers when automated devices and other innovations are used in the teaching process.

The laboratories should immediately begin testing the many theories of how the education process, pre-school through high school, might be reconstituted. Some proposals which SCPE has heard about include the following:

If school is viewed as an eight or twelve year period to develop certain competencies, pupils having consuming subject matter interests might be allowed to concentrate on that subject for a year or semester.

The standard practice in which classes move en bloc from one subject to another according to schedules of hours and times of the year, is said to affront development of self-direction in learning and independent study habits.

Grouping elementary pupils for instruction by interests and skills rather than by age levels is recommended for experiment. Those with a passion for insects, electricity, or ceramics could work together regardless of age. This is the way voluntary activities in secondary school--dramatics, music, year books and other publications--generally presenting fewer problems of discipline and motivation, are organized.

Such structure would bring into play the teaching of children through discussion with other children. It would enhance opportunities to let upper grade pupils teach those in lower grades, a powerful learning method for both levels.

Another proposal which might be tested asks that the specific function of each successive three or four year period of schooling be defined, and that each phase be dealt with as an entity in itself. As an example, the first three years could be devoted to the fundamental approaches to learning, and the fundamental learning tools, especially reading. Proponents of this arrangement argue that by concentrating on fundamental areas, poor reading and other learning problems can be noted and diagnosed, and that it would encourage use of a variety of teaching methods.

Some learning theorists consider that the most significant changes are effected during early years, suggesting that more importance ought to be attached to pre-school and kindergarten. At present, cost per pupil for vocational and higher education is notably greater than in the early grades. If theories about early learning are valid, the conclusion follows that early grades should get a larger share of educational resources. Laboratory schools, by testing the theory, can help make that decision.

SCPE is told that as early as the second grade, it is possible to predict later school success with a high degree of probability. This suggests modifying programs for those whose success expectancy is low. The objective, of course, would be extra help to bring them to their maximum.

The point in these variations is a reenforcement of SCPE's finding that school practices should not be so fixed by regulations that change is impossible or difficult. There is too much yet unknown about the learning process.

The self-contained classroom, 30 to 40 children in a single grade, is not the only grouping for elementary schools. Departures from it are tried only sparingly, because there is scant encouragement for the schools to move into unfamiliar ground.

SCPE consultants reported that most teachers and administrators who declared they were using innovative practices deceived themselves. The innovation was only the old bus with new paint.

The non-graded school concept has been cautiously tried since 1939, but has not really caught on, although it promises a way to cut and shape educational programs for the individual.

Although displacement of the traditional school is slow, educators advise SCPE that eventually, the instructional program will be organized for classes of 45 to 150 or more students. The concept immediately suggests multiplying the number of individuals conducting instruction. The combination would vary:

Perhaps it would be two professionals and several aides; or a general teacher with a team of specialists; three or four full time professionals; or lectures to a large class, which would be sectioned into small groups for further work.

Such approaches open possibilities to the use of teacher aides, interns, assistant teachers, teacher leaders. Teachers, or teams of teachers, could assess the weakness and strength of individual pupils and prescribe programs fitted to complement them.

These possibilities have largely been ignored by teacher training institutions. Few schools employ the newest tactics and available equipment and techniques suggested by computer technology, programming, audio-visual methods, and intensive in-service teacher education.

We look to the new laboratory schools to point the way to answers. They, as well as the demonstration schools, would have a responsibility for collaboration with teacher training institutions, but they should not become adjuncts of the latter, and their uses diverted to the production of teachers.

Although we see the laboratory schools as new from the ground up, demonstration schools should be chosen from existing plants, in order that education professionals might see in operation processes that could be adapted to their own schools.

Laboratory and demonstration schools should include a variety of student compositions, according to prevailing ethnic and socio-economic variations of the community.

It might be well in initiating a demonstration school in an existing plant to transfer all personnel and start with new teachers and a new principal. The latter should set a tone of innovation and expectancy, and relieve teachers of the non-instructional chores which, SCPE is informed, now eat up a third of their time.

The district should develop its own program for demonstration schools, but should give priority to what comes from the laboratory schools and the interpretations of its own classroom teachers. No source of information should be ignored.

This goal should be kept in sight: let the pupil discover and develop through his own efforts his powers to reason.

Laboratory and demonstration schools should be so linked by television that a full flow of information, observation, and consultation can be maintained between them. Both units should operate under the scrutiny of the SCPE-recommended state Educational Inquiry System, which would monitor programs and remove blockages.

CHAPTER VIII

THE EDUCATIONAL INQUIRY SYSTEM

SCPE Recommendation--Create a permanent system for educational inquiry to inform the profession, legislators and other decision-makers, and the public about the state of the schools. Long-range forecasting and planning, identification of needs, and the assessment of how well needs are being met should be among its functions.

Planning the Future

California is criticized for neglecting the continual, comprehensive collection and appraisal of records on the performance of the schools and data pertinent to giving direction and purpose to designing instructional programs for the future.[1] This neglect must be remedied. Not to do so would imperil the emancipation process proposed for local schools and their teachers.

This absence of basic information hampered the task of SCPE. Our consultants were unable to get desired factual information and were told both by the State Department of Education and local school districts that desired records were unavailable or did not exist.

An inquiry to twenty leading school districts as to how many teaching applicants and the nature of their qualifications were received annually, met with the response that this information was not kept.

An attempt to inventory curriculum practices failed because, SCPE was told, no statistics are collected by the state on enrollments by subjects nor suitability of curriculum to the needs of the pupils or the community. The degree to which newer curriculum innovations are accepted, relevance of curriculum to needs of dropouts and college-bound students, and the relation of subject matter actually taught to the state legal requirements are other key facts which are not available.

Even if these data were readily available, there was no process to compare their relevance with the needs of the future. Since graduates of today's schools are to live in the 21st Century, it would seem most sensible to undertake advance soundings of that future. Although other departments of state government and many leading private business firms within the state maintain a constant scanning process to estimate the shape of the future and reach decisions according to the best available forecast, there is no concerted effort to do this for the elementary and secondary schools of California.

Resources are great but not unlimited. Intelligent forecasting should allow the selection from a series of propositions that one deemed most likely to achieve a desired goal at a satisfactory cost.

Systematic research efforts have not been undertaken previously because in all likelihood the schools were regarded as a passive reflection of society. We are now beginning to understand that the future can be shaped in desirable directions. The latest statistical methods, decision-making techniques, computer technology, and other appurtenances of the times give the instruments for forecasting and programming. They also intensify the need to make every effort in that direction. Automation has already affected the lives of the unskilled, and it threatens to change drastically the lives of the skilled in the next few decades. The very tools that threaten us can be used to advantage, if we but will it.

A multitude of agencies, particularly those generated through new federal level activity in education, is providing an increasing flow of information. But SCPE's consultants report that the information is not getting through to classroom teachers or even local administrators. The draft report of the Arthur D. Little, Inc., study of the State Department of Education notes concern at all levels over "the cultural lag in the dissemination and adoption of reasonably proven educational developments. Educational administrators...need information, guidance and assistance."[2]

SCPE concurs in the findings of the Little report, which notes that educators must be sensitive to demands from segments of the population for various degrees of attention to disparate ends. These include driver, health, and drug education, special attention to the handicapped and the gifted, help for the pre-schoolers and for retraining of adults.

The Committee believes that it is not only feasible but imperative to find better ways to judge the value of programs competing for attention in the limited school day. Eminent commentators such as Dr. Conant have found fault with the way public school decisions are reached in California, eventually by the Legislature after a multidirectional tug of war among a whole field of combatants.

The legislator wearies of making technical decisions in the absence of situation reports that explain to him the consequences of what he is doing. Statutes freeze processes into the education system, leaving those who are closest to the issue powerless to change it.[3]

An Educational Inquiry System using information collected at a state level, could use computer-based techniques to simulate futures.

Legislators and educational decision-makers can be guided by these predictions, which would be regularly revised in light of developments. Educational policy-making can shift from a defensive posture to the offensive. It could take the initiative in meeting the future.

The Educational Inquiry System could also reenforce the laboratory and demonstration schools as a tool for spreading information. SCPE is told some twenty years or more intervene between the invention of an educational technique and its appearance in the classroom. There is an immense output of technical information, but it appears to be slow in reaching the point of application, that is, the teacher.

There is no clear definition yet of what shape an Educational Inquiry System should take. An intensive design study is required. Among the uncertainties are where best the system should operate--inside or outside the Department of Education? As an independent agency or as part of some existing state level organization other than the Department of Education?[4]

A powerful booster for long-range educational planning is the U.S. Department of Health, Education, and Welfare, which sought federal funds for the purpose in its proposed 1967 amendments to the Elementary and Secondary Education Act.

The Department urged allocations to improve state department of education planning for future needs in the amendments (HR 6230). It suggests that funds could be used by state departments or combination of state departments, or school districts of metropolitan areas. Also technical assistance to local school districts would be made available on request, as recommended elsewhere in this report.

The Committee perceives an intensified concern at many levels for the need of more organization to meet future needs. California, in light of the Arthur D. Little, Inc. report and the work of SCPE, already has taken the first steps in that direction.

Testing: A Dilemma

The Educational Inquiry System is viewed as embracing two primary services: first, to supply information, including projections of the future, and offer an array of options for selection by the local district; and second, to review performance of the school system for identification of needed improvement.

To be effective, both purposes must be dealt with at state level, but to be acceptable under the SCPE recommendations for freeing the schools, they must be offered as services, rather than imposed as controls.

In particular, a danger is posed in rating student performance. Mass testing is the cause of the sharpest disagreement between those in school management and those purporting to speak for the public and Legislature.

SCPE has noticed the resistance of the American Association of School Administrators to "national assessment" of pupil achievement, and the controversy over release of California's statewide test results. It has examined the uses of testing in programs of the New York State Department of Education aimed at assuring quality control of the educational process.

The question is asked, "For what purpose are test results to be used, once collected?" and again, "What do you expect the tests to show?" Respected educators after considerable experience with testing insist that the "norms" used should not be construed as standards, and that test scores at best merely provide some hypotheses of relative strengths and relative weaknesses.

SCPE is advised that testing is highly susceptible to misinterpretation and published results frequently lead to unwarranted conclusions. We suggest, however, that if the wisdom of the Legislature and the Board of Education directs that tests be conducted, these two bodies first should specify the objectives of the test.

The tests could be conducted periodically, in alternate years or every third year, and we see no reason why testing cannot be done by sampling, according to contemporary techniques of opinion research. A sampling of fifth graders or the eighth graders or the twelfth graders in the state would reveal their attainments, and supply the Educational Inquiry System what it needs to know.

To assist the testing program, we suggest the employment of a state advisory commission, to include administrator and teacher membership, public representatives, and technical experts from outside the education system.

In addition, districts should be encouraged to develop their own testing as a self-measuring and self-correcting process tied in with instruction. Districts should be encouraged to publish their findings and to educate the community in effective use of test data. Districts, freed of mandates, may be inclined to experiment in new techniques of program assessment.

The involvement of classroom teachers and counselors is a positive need. They should enter into evaluation of the tests and their interest should focus on improvement of instruction and the guidance of children. All who are concerned with testing and achievement records should keep in mind that their validity with respect to children of low income background is most suspect. Test scores are clues, not definitive measures, and dependence on them alone in determining a basis for educational tracking and counseling is deplored.

Footnotes

[1] The position paper, Curriculum Innovations for the State's Quality Growth as We Approach 2000 A.D., prepared for SCPE by Paul R. Hanna (unpublished), dwells on this lack and offers means for remedying it. The paper on Teacher Supply and Demand in California by Werner Z. Hirsch (unpublished) records his inability to obtain data on the subject.

[2] A New Organizational System for State-Level Education Administration: A Recommended Response to Emerging Requirements for Change in California, May, 1967, pp. 22-23. Arthur D. Little, Inc.

[3] See Goodland, op. cit., page 57, for a recommendation and argument in behalf of a continuous, independent survey of the state's educational system.

[4] Memorandum of Comment, Reservation, or Dissent by George Johns:

I concur in recommending a permanent system of educational inquiry. The proposal errs, however, in reserving, by implication, the field to the educationist and in belittling the role of public participation.

Few of us would argue that the computer is not a valuable research tool. It undoubtedly should be put to use. But the hardware of research is less important than its substance. Research directed at trivia will inevitably produce trivial results. The value of research, its usefulness, its relevance will be determined by who asks the questions the computer is asked to answer.

In this light, the signal importance of direct, immediate, and broad public participation in asking the questions should be self-evident.

Under our public school system, educational policy has long been reserved to the people. Increasingly, however, the professional educator and the school administrator have trespassed on these reserves. As a result, our public schools are increasingly weakened by isolation and lack of understanding. The public has too frequently been fed a skimpy diet of inadequate information.

Neither the parents of school children, nor any segment of the people of our State welcome being talked down to. Nor do they appreciate being patronized as a kind of unavoidable millstone around the educators' collective neck.

If our public schools are to regain the widespread community support, the broad, sympathetic understanding they urgently need, public participation offers the only sensible way. No program "to inform" the public can cut the buck.

The report offers no design for the proposed inquiry system, perhaps properly. But public participation in such an agency, however it is designed, needs to be built in right from the start.

Whatever the design, the proposed inquiry system could make imaginative and effective use of a variety of task forces to promote public involvement. They could be used to evaluate techniques, review results, propose questions and consider answers---all in the light of educational policy geared to public policy.

A Task Force of bankers, industrialists, merchants, labor representatives, etc., could be given the task of reviewing texts, teacher training, curricula in the area of economic education. It could point the way to ameliorating the ignorance of economic facts of life which today is certified by so many high school diplomas.

Task Forces of management, labor, civil rights groups, minority and ethnic communities, could well look into the area of vocational education, industrial arts, distributive education, on-the-job training, counseling, goal establishment, motivation. Perhaps they could find ways of offering greater skills and greater hope to that growing number of students who are subjected to college preparatory education while waiting to drop out or terminate their high school confinement.

A Task Force could recommend ways of making secondary education more meaningful, of adjusting and clarifying its relation to higher education, and of mapping between them for students who are confused and disinterested by today's route.

A broadly-based task force could encourage participation and involvement by exploring ways of improving the quality of education in schools with heavy racial imbalance and of winning recognition of the individuality of their peers by both privileged and disadvantaged students.

As the field is abandoned to the professional educator or the school administrator, the public schools lose by that much their roots among the people of the state. Public participation offers the only way to involvement and growth.

CHAPTER IX

ORGANIZATION OF SCPE; METHODOLOGY

The state Committee on Public Education was suggested in "The Emerging Requirements for Effective Leadership in California Education," a study submitted to the State Board of Education by the Arthur D. Little, Inc., in November, 1964. Among conclusions of that report was a series dealing with the board's role in organizing state developmental planning for education. These conclusions suggested that the board could initiate studies through especially appointed commissions or task force groups.

Included as appropriate studies for such groups were:

Reviewing problems and opportunities in education, assessment of the desirability of the state's attacking them, assigning priorities for action and reviewing them in the light of changing circumstances, and deciding among allocations of effort to various actions.

When, late in 1965, Title V of the Elementary and Secondary Education Act made available funds to serve the purposes suggested above, a special committee was called upon to design an acceptable study.

The Ad Hoc Committee on Title V, commonly known as the Committee of Seven, submitted to the State Board of Education December 9, 1965 a plan for a State Committee on Public Education, and the board undertook to obtain Title V funds for the project.

SCPE was instructed to advise the state board on the current condition and future development of education, with particular attention to those parts requiring improvement. Implicit in the proposal was the idea that the committee should focus on the future, and that it should consult opinions of citizens of the state "in all walks of life."

The Ad Hoc Committee educators who designed the SCPE project stipulated that it should consist of laymen. They suggested that the staff of the Department of Education participate with SCPE, aid in setting priorities, involve itself in the discussions and provide "status reports...on problems and opportunities."

A membership of 24 representative Californians, whose recruitment was credited to State Superintendent of Public Instruction Max Rafferty and to the Board of Education, was announced by then Governor Edmund G. Brown on April 14, 1966.

Method of Operation

The State Committee on Public Education convened for its first meeting April 23, 1966. A staff was assembled according to provisions of the Committee of Seven's suggestions, and preliminary research areas were considered.

The committee was able to contract before the end of June for a series of major position papers from educational scholars. These papers deal with issues of teacher training and teacher supply, curriculum for the future, instruction, and teaching of disadvantaged children.

The following is the list of the position papers prepared in these contracts and forwarded to the State Board of Education:

Dwight W. Allen and Kevin A. Ryan -- "A Perspective on the Education of Teachers in California in 1980."

John I. Goodlad -- "Instruction."

Paul R. Hanna -- "Curriculum Innovations for the State's Quality Growth As We Approach 2000 A. D."

Werner Z. Hirsch -- "Teacher Supply and Demand in California."

Alan B. Wilson, Arthur R. Jensen, and David L. Elliott -- "Education of Disadvantaged Children in California."

Aaron B. Nadel, Edith J. Feniger, and Lohnas H. Knapp -- "The Future Requirements of Public Education in California."

With the exception of Dr. Nadel's paper, which was too long for reproduction, these position papers appear as appendices to this report.

The papers served two functions: to inform the committee and to attract comments from professional educators, schools of education, associations and agencies of various kinds either directly or indirectly concerned with education. It was an assumption that this was a more precise way to accumulate informed opinion than through the conduct of public hearings. Position papers were widely distributed throughout the state to all who could be induced to respond to them. Two-hundred-seventy individuals or organizations eventually did so.

As a second device to stimulate opinion, SCPE's consultants interviewed 115 scholars from the varied disciplines in the private and public universities and colleges of California.

A research agency was engaged to review the environment anticipated to exist in California in the coming decades. This agency also suggested ways in which computer-based technology might serve a research and development function for the schools.

Additional explorations were conducted by short-term workers engaged from experienced school personnel. The Committee also shared the benefits of two collections of studies made by the Eight-State Project, an ESEA Title V undertaking in the Rocky Mountain area serving the same general objectives as SCPE, and had the cooperation of the Southwest Regional Laboratory of Los Angeles, and the Far West Regional Laboratory of Berkeley, plus that of the 21 district supplementary education centers-- all projects funded by other divisions of ESEA.

An 11-member team convened at SCPE's Berkeley headquarters for eight days, January 25- February 1, 1967, to appraise the total mass of material. The team represented a variety of scholarly disciplines, several levels of teaching and school administration including city, county, regional, federal, and college organizations. It was knowledgable about public opinion and the legislative scene. Its mission was to organize the material and select what appeared to be patterns of thought manifested in it.

The Committee itself met monthly from April, 1966 on, to initiate requests for information and act on staff recommendations for studies to be undertaken, to discuss with leaders in education various problems as they saw them, and to undertake critical review, with their authors and with professional critics, of the six major studies that it commissioned.

PART TWO

June, 1968

CHAPTER X

INTRODUCTION AND RECOMMENDATIONS

The State Committee on Public Education in Part One of its report concluded that California can best serve the future by establishing a series of objectives for the public schools. The Committee determined that the rapidly changing technological society anticipated in coming decades defies efforts to detail those intellectual and manual skills the schools should teach. In lieu of such a description, the schools should nurture each child to grow in his own way to his highest capability and potential. The one indispensable skill is the ability to identify problems and choose ways to solve them.

Since completing its interim report, dated June, 1967, SCPE has dealt with additional parts of its assignment from the State Board of Education. In general, its studies have dwelt on ways of accomplishing the goals set forth in Part One, and the topics substantially have involved modernizing the mechanics of the school system in accord with man's growing knowledge of management sciences and the most recent results of research and development in education.

Through the collection of data, some original research, and consultation with authorities in various fields, the Committee has reached a series of conclusions which it recommends as guides in setting educational policy.

These are:

1. Individualized instruction for each pupil is needed for true equality of educational opportunity.

2. Individualized instruction demands efficient deployment of resources but is well within reach if we proceed wisely.

3. The first step should stress the establishment of program priorities in educational decision making.

4. A prerequisite to planning priorities is a permanent Educational Inquiry System reporting to the State Board of Education. Among its functions the Inquiry System should identify improvements in curriculum and techniques leading to individualized instruction.

   It should provide guides for investing educational tax dollars.

   It should improve understanding of the teaching process and enlighten decision makers about better methods of preparing teachers.

5. Program planning, with the help of the Educational Inquiry System and the reform of state and local tax practices, will enable full commitment to public schools without an unendurable burden on the taxpayer. The rate of spending per pupil can be assumed as doubling within the first five years.

Arguments for these conclusions are set forth in chapters of this report, and are summarized here.

Programs and Priorities in Education

The planning approach to educational decisions is not without hazard. Measurements and qualitative judgments can go wrong, yet reason demands that we plan. Planning implies that educational objectives are defined, that standards of attainment are determined, and that the several promising paths leading to those ends are subjected to cost-benefit analysis and the most desirable method chosen. The better this is done, the greater will be the public's return from its commitment to education. For each dollar prudently invested, the commonwealth reaps a positive benefit.

An Educational Inquiry System

The planning approach has its beginnings in a permanent Educational Inquiry System. The mechanism is seen as embracing a data file of student records, information about the training and distribution of teachers, fiscal capacity of the community and state, intelligence from Experimental and Demonstration Schools, Department of Education research functions, and other state and federal research. It could draw additional information from the scholars of colleges and universities and from public opinion analysis reflecting beliefs of the citizenry at large. It can employ demographers and forecasters to accumulate economic data and explore manpower needs viewed in connection with anticipated industrial and technological change. Two possible structures are discussed, one using only professional educators and a second, "Open" system, employing a wider range of abilities and experience.

Improved Financing of Education

Although California has poured vastly increased funds into education, the increase has only slightly exceeded what is necessary to serve an increasing school enrollment and keep pace with inflation. Chapter XIII explores these facts and expresses the need for analysis in determining how best to apply educational tax dollars. Pending the establishment of a permanent Educational Inquiry System, many reforms can be undertaken. Among these is the introduction of an incentive system to reward local districts willing to set higher standards and work toward achieving them.

Advantages of a statewide property tax in conjunction with a local supplement to the state income tax for support of schools are explored. This chapter also discusses state fiscal assistance for the in-service training of teachers and the assumption of all pupil transportation costs by the state as a stimulus to the racial and socio-economic integration of schools. The plea is made to prepare now to stake claims for a fair share of any increased federal aid to local education, which can be anticipated in the near future.

SCPE suggests that the state set as its target a financial acceleration that would, in five years, double the commitment to the common schools. Although at first glance this might seem to be an extraordinary burden, evidence is adduced to demonstrate that it would mean only a 1 1/2 percent addition to otherwise expected cost increases.

The Urban Factor

The changing demographic character of large cities, in California as in the rest of the nation, suggests that many needs are inadequately met by present resource allocations. Concentrations of poverty and low scholastic achievement produce special school problems and costs that threaten to destroy the big city. Chapter XIV deals with the possibility of correcting imbalanced tax distribution through a more sophisticated state aid formula. Not big cities alone, but all communities exhibiting symptoms of urban decay could be assisted by the formula.

Appendices

The text of several studies organized either by the staff of the State Committee on Public Education or prepared by consultants are appended to this report.

"Manpower Guidelines for Educational Policy Planning in the State of California," by Nicholas DeWitt, is a summary of the author's survey of resources for educational planning within the State. His findings and recommendations in the introduction of his report are commended to educational decision makers for consideration and further study. Among other points, DeWitt reports that forward planning to deal with educational objectives in the State is virtually nil, and he suggests that trouble may lie ahead unless the productiveness of the schools, that is, their ability to retain students through high school and college, is improved.

A consulting team headed by John E. Keller examines the possible application of program budgeting techniques and cost-benefit analyses to the problems of school management and concludes that positive benefits will accrue if skilled program analysts are made available for local school districts. This study notes that a substantial beginning on the data system upon which such work would rely has already been effected in the State Department of Education's Bureau of Systems and Data Processing.

The inability of many rural and semi-rural districts to employ a sufficient number of the kind of well-trained teachers they desire is confirmed in a study reported under Appendix F. A team headed by James Guthrie gained access to a substantial number of teacher questionnaires collected by the Senate Fact Finding Committee on Education. Analyses of the data appear to establish the rural areas, including some 20 percent of the state's public school enrollment, as "have nots" with respect to teacher quality. Some possible ameliorative actions are suggested.

Teacher Preparation, A Continuing Concern

SCPE in Part One of its report invited teacher training institutions to remodel their programs and to work with appropriate school districts in preparing teachers to meet the challenge and opportunity of the 21st Century. New provisions, such as the Federal Education Professions Development Act and the California Internship Act of 1967, now available, are discussed in Appendix G. Critical weaknesses are noted in training teachers for core area schools and in equipping them for best use of assistants. Use of SCPE's proposed Experimental and Demonstration Schools as a source of insight on desirable teaching techniques is proposed.

Corollary to the training of teachers is the question of getting able teachers in difficult jobs. The aversion of middle class teachers to the core area is well documented. The thin distribution of excellent teachers in rural districts has already been noted.

Work in Progress

SCPE's initial set of recommendations, described in Part One of this report, were discussed before the State Board of Education, September 14, 1967. Principal spokesman for the Committee was Chairman Frederick E. Balderston. He said at the time:

> What we are proposing is an investment of major proportion in innovative and experimental approaches to education, to recognize the individuality of learning requirements, to recognize the diversity of these requirements, and, specifically, to put a substantial proportion of this investment in the sectors of society where the gap between potential and actuality is most serious.

In turn, the then president of the Board, Dorman Commons, asked for a series of meetings in which the Committee could continue to explain its program in depth. Subsequent meetings elicited a tacit Board agreement that the initial SCPE recommendations would be developed and that if legislation were required, the appropriate draft documents would be prepared for introduction into the legislative process.

The Board called upon the State Department of Education to prepare legislation aimed at accomplishing SCPE's Recommendation One (requiring local district preparation of plans for integration of the schools on a racial and socio-economic basis) and to design a program for a network of state-supported Experimental and Demonstration Schools as proposed in SCPE Recommendation Two.

The SCPE professional staff and consultants joined in preparing their interpretation of an Experimental School system to serve one percent of the state's total public school enrollment and a Demonstration School network to be administered under direction of the State Superintendent of Public Instruction. The staff also conferred with the State Department of Education's Bureau of Intergroup Relations in the preparation of draft legislation to encourage school integration by requiring all schools of a district to be comparable in quality of physical facilities, teacher competency, materials, and the distribution of pupil talents. The texts of proposed legislation will be found in Appendix H.

A new perspective on another SCPE recommendation was offered through a poll of California public opinion relative to education prepared for SCPE by the Field Research Corporation. Results of in-depth interviews of a cross-section of the state's population are supportive of SCPE belief that additional means must be undertaken to establish greater public comprehension of education. The public opinion poll findings appear as Appendix I.

CHAPTER XI

A FRAMEWORK FOR POLICY: PROGRAMS AND PRIORITIES IN EDUCATION

SCPE Recommendation--Education decision makers should rely on techniques of program budgeting in planning the accomplishment of statewide and local objectives for the public schools.

Boards of education and administrators must constantly choose the best ways to spend school money. Many of their choices deal also with the allocation of resources involving no cash payment, such as the assignment of student time. Classroom teachers and students also must choose how to use resources. It is most vital to California and the nation that these educational decisions be good ones and that the resources allotted to education be wisely distributed.

School systems must be measured by how much learning is engendered in their students and the relevance of that learning for continued intellectual development. If the State wishes, it can encourage districts to hire more teachers, it can see that the teachers are better trained, and it can provide the materials of the technological revolution in education. But any student, whatever his aptitude, has only a certain number of hours to devote to learning. A student hour poorly used is an unrecoverable loss--learning foregone instead of learning accomplished. A state school system exists to help students use their hours effectively. Every resource allocation should be judged strictly by whether it helps or hurts effective use of student time.

It is true in education, as in other branches of public business, that the administrator lacks clear guides for resource allocations. He uses some resources unpriced in the market. Accordingly, it is difficult for him to compare effectiveness of alternate programs in terms of their full costs. Even those services and goods he buys in the market are often not comparable, and it is difficult to describe precisely what he is getting for the money. It is difficult to say, for example, that recently hired teachers in one district are more competent than, less competent than, or equal to those hired in another.

In contrast to the school administrator is the head of a small or medium-sized business. His inputs are priced in the market, and he can regard labor costs of a given category as interchangeable. He can measure how well he does by his profits. By simple experimentation he can come close to that set of resource allocation decisions which maximize his profits. But major experiments are difficult to mount in a school. What district, for example, has by experiment determined the reduction in rate of school failure when its most competent primary teachers are given classes of only eight pupils? What guides do conventionally trained administrators have for judging whether the given reduction in failures is worth the cost?

Educational Objectives and Program Structure

In spite of these difficulties, management innovations promise significant improvements in educational decision making. The system of planning, programming, and budgeting has proved useful in large corporations and in major branches of the public economy. Appendix E shows reasons to believe it will be fruitful in education.

The systematic approach to resource allocation begins with planning, and planning involves defining objectives. To proceed rationally, objectives must be defined in operational terms. It is not good enough to say that the objectives of education is to "develop the whole child," because it is not possible to determine how far this objective has been accomplished in any given period of time.

How can operational objectives be defined in education? This is a large order, and to be done well requires much data and much analysis. It requires, in other words, an Educational Inquiry System.

An illustration of the process of defining operational objectives follow. Suppose it is determined that the performance of a student during his entire school career is likely to be influenced strongly by progress in basic subjects in the primary grades (investigations up to this time support the assertion). This finding could establish a high priority toward instruction in basic subjects in primary grades. Reading is one basic subject.

An operational objective, using the concept as a measure of the effectiveness of school programs, might be stated: To seek the result that each pupil achieve at least one year's advancement, as measured by tests of grade placement, in reading skills for each full year of school attended, following upon his first test of reading skills recorded in California schools. Progress toward this objective is measurable.

The monthly rate of advancement in grade placement in basic subjects is the chief criterion of success of Title I ESEA projects supervised by the Office of Compensatory Education in California.

The use of quantitative measures of the effectiveness of programs does not imply that children should reach only the defined level of performance--just that, insofar as possible, no child fall below the level.

The statement of objectives makes it plain that goals in education cannot be achieved instantaneously. Planning implies the setting of objectives that can be reached in the future. Consequently, planning imposes a discipline of the policy maker to see that this year's resource allocation decisions are consistent with the long-run objectives of the district.

Once a set of operational objectives is set forth, the next step is to determine which activities contribute toward fulfillment of each objective. An interrelated set of activities is called a program. For example, the set of activities centered in a reading laboratory could properly be described as a program. With some effort, it is possible to determine the dollar costs of different programs, as shown in Appendix E.

Ordinarily, it is possible to achieve an educational objective in several ways, requiring that choices be made among different programs. For example: a large district finds substantial numbers of pupils, who, failing in basic subjects, are clustered in certain schools. High intensity remedial programs are established in those schools, yet failures continue. Let us say inquiry establishes that those pupils suffering the severest learning problems tend to come from families which move a great deal. The district considers optional responses to this. It can provide even more instructional service to the distressed schools, or it can offer additional transportation, so that no child's school year need be interrupted. He could remain in the school in which he started, although the family had moved to another attendance area within the district.

The rational consideration of choices from among several possibilities requires that administrative policies for the shaping of school programs be much more flexible than they now appear to be. This suggests a modern management approach. When the objective is established and the various ways of attaining it are known, the next step is to choose from among them on the basis of relative costs and benefits. Cost-benefit analysis determines how far toward the objective a sum spent on Alternative A takes the district and how far the same amount spent on Alternative B will reach. Cost-benefit analysis can be simple or complex, depending on the difficulty of assessing the productivity of alternative programs. Its essentials are:

1. Different ways to achieve specified objectives are systematically examined and compared.
2. While the first set of possible solutions is under consideration, a search for better ways continues.
3. Systematic examination of old and new alternatives frequently suggests some modification in the objectives themselves. This is to be encouraged.
4. The costs, direct, indirect, present and future, are appraised for each possible solution. The gains or benefits accruing to each are assessed.
5. Although most of the work is quantitative, it should frequently be supplemented by qualitative analysis.
6. Lastly, the time period of analysis is an extended one. This creates problems in the treatment of uncertainty that should be dealt with explicitly.

Planning should be systematic but not inflexible. In any properly functioning analytical system, objectives are constantly under review.

Program Costs and Their Measurement

Ideally, each school district would function under some form of program budgeting. Objectives would be defined in operational terms, programs would be identified and all variable costs (i.e., expenditures that change as the short-run level of activity in a given program is changed) would be traced to a particular program. Efficient choices among alternative programs would be made. Finally, the year's budget would represent the costs of those programs chosen to make a year's progress toward long-run goals. Program budgeting does not make administration easier but it offers promise of making it more effective.

The Committee is aware of the danger of poorly constructed program budgeting. The standard of competence of those involved must be high. Skilled analysts are required. One of their first tasks will be to establish a series of program accounts under which costs of instructional and supporting service can be categorized. Costs include salaries of staff, supplies, depreciation of equipment, contracted services, etc. Often, it will be necessary to prorate time of instructional staff among the different programs in which they are involved. It will be necessary to categorize each expenditure by program element, by object (or type), by administrative unit, and by fund source. Initially, at least, the program accounting system must be translatable into the line-object accounting system of the Department of Education.

This process of program accounting is a necessary step toward studies of cost-benefits, or as some prefer, "cost-effectiveness," which is sometimes mistakenly equated to a search for the cheapest method.

A critic might properly say, "What we want for our children is the best education, not the least costly." We would also like to have the most effective programs to fight forest fires, control air pollution, reduce hunger in the world, provide recreational opportunities, and many many other things. Scarcity of resources prevents us from having all these at once. So, choices must be made, and this means we all engage in cost-effectiveness analyses. The only question is whether to rely on intuition (or guesswork) or use the best information that can be mustered. In fact, we could say that school administrators have two special tasks: constantly to probe and test the public's willingness to spend money on schools, and to engage in analyses about the rational allocation of whatever volume of resources is available.

Investment in Education

The strength of the democratic system rests upon an informed and alert citizenry, and that, of course, is reason enough for educational investment. But educational expenditures can also be justified as good business in the dollars and cents viewpoint. A significant number of economists have provided convincing evidence that education has accounted approximately for 25 percent of the economic growth in the nation. To bring the point closer home, a Department of Labor study showed that in 1963 high school graduates were earning $61.09 a week, average, while dropouts were earning $50.84. Two years later the graduates' earnings had risen to $98.54 a week, a gain of $37.45, while the dropouts averaged $61.88, an increase of $11.04.[1]

We do not have in California reliable, up-to-date data on the relation between earnings and level of education. Neither are estimates of the economic returns for different types of education currently available. These estimates could well be provided by an Educational Inquiry System, to be used as one, but only one, guide in making broad policy decisions. In the absence of actual figures it can be said, however, that under reasonable assumptions a net yield to California can be expected in return for, say, a doubling of educational expenditures.

For example, assume that any group of 100,000 students who enter first grade next year have an education $700 a year more costly per pupil than is presently provided in California, and let each year of schooling through the twelfth be increased in cost by $700 more than present levels. (This would represent a doubling, approximately, in real terms of present resource commitments to elementary and secondary education.) The present discounted value of the extra expenditures for the 100,000 students (at a 5 percent discount rate) would be $651 million.

(To discount is to discriminate between the cost expressed in today's available money and the value logically to be expected at some time hence, taking into account interest on the investment.)

At this point eliminate half of the students from our calculations, on the assumption that (1) they were unaffected by the improved schooling or (2) they left California after completing high school and played no further part in the economy of the state. For 25,000 students assumed that they begin work after graduation, with their earnings prospects improved on an average by $2,000 per year--this is roughly equivalent to present differences between the high school graduate and the dropout. Finally, assume that the remaining 25,000 students continue through four years of college and then experience an average $2,000 per year earnings increase, attributable to their improved elementary and secondary education. The $651 million in extra costs would be repaid in present discounted values (at 5 percent) after only 20 years of working life of the college graduates and 24 years of the high school graduates, and with a $50 million margin.

Since the working life is approximately double that length of time needed to pay off the cost of an intensified school program, it can be argued that education is a growth investment having every likelihood of doubling its purely economic value in a lifetime.

Footnote

[1] Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics, August, 1966, page 864.

CHAPTER XII

ORGANIZING A PERMANENT SYSTEM OF EDUCATIONAL INQUIRY

SCPE Recommendation--Establish an independent Educational Inquiry System reporting through the State Board of Education to educational decision makers and to the public.

The charge to SCPE from the State Board of Education directed that among other duties it plan "a permanent system for the identification of the educational needs of the State and the establishment of priorities among those needs."

Preliminary examination led SCPE in Part One of its report (Citizens for the 21st Century, June, 1967) to recommend that the State Board of Education, in collaboration with the Governor and the Legislature:

> Create a permanent system for educational inquiry to inform the profession, legislators, and other decision makers, and the public about the state of the schools. Long-range forecasting and planning, identification of needs, and the assessment of how well needs are being met should be among its functions.

SCPE has examined at some depth what appeared to be the two most likely structures for such an inquiry system. It now recommends what can be described as the Open System in preference to a Professional Educators' System. SCPE reached this judgment in part through its own experience as a short-term "open" inquiry agent.

However, the function is more important than the form. The Board is in the best position to determine which structure will serve it best, and it can be guided toward a choice through its experience with SCPE as an experiment in inquiry.

The Open System and the Professional Educators' System have features in common as well as differences. Before examining them, however, it will be useful to look at the sources from which either system would draw information. They include: the Bureau of Systems and Data Processing in the Department of Education; the Bureau of Research proposed for the department in the report of Arthur D. Little, Inc.; the various federally aided research and development centers in California; SCPE's proposed Experimental Schools network; and the Board of Education's Curriculum Commission. Public opinion is in itself a source, and the inquiry system should take periodic readings of it and, also, consult our university faculties regarding the general advance of knowledge. Anticipated shifts of population and the economy's manpower needs must be considered in long-range planning.

Pupil Characteristics and Educational Records

The State Department of Education has already joined with local districts in the start of an Educational Information System. Its development is outlined in Appendix E of this report, pages 175-9. Fifteen regional data centers are in prospect; ten are now operating. Larger districts may do their own data processing; others will rely on the Department's regional centers.

A pupil services subsystem is already storing pupil attendance, test scores, subject credits, and grades. Illustrative of the value of such record storage, it is now possible through data analysis to detect the onset of school failure for a particular pupil by the third grade. Subsystems for business services, personnel, and accounting analysis are being developed.

This data base and an accompanying reporting procedure will greatly help administrators. The Department of Education and the State Board will be able to use this source for analytical findings to assist them in setting policy. Examples are discussed later in this chapter.

SCPE has already touched on problems of testing in Part One of its report (Chapter VIII, pages 28-9). The design and application of tests is of critical importance in guiding educational decisions, and it is equally important to prevent misuse and misinterpretation. SCPE suggested that sample testing might be appropriate for a state educational inquiry system, and it proposed an advisory commission of teachers, administrators, public representatives and outside technical experts to guide state testing programs. Further, it suggested that districts be encouraged to develop their own testing programs involving teachers and counselors with the goal of improved instruction.

The Who, What, and Where of Teachers

SCPE discussed teachers' work, training, and recruitment in Chapter VI of Part One of its report. The Educational Inquiry System should provide a solid base of information about teachers. The value of such an enterprise is suggested by a SCPE staff project which examined the geographical distribution of teaching talent in California. Computer analysis of raw data collected by the Senate Fact Finding Committee on Education indicated that rural districts of the state at present do not attract a proportionate share of better teachers in comparison with urban and suburban districts. The study reported in Appendix F illustrates the kind of Inquiry System activity which can point out new approaches: in this instance a SCPE staff suggestion that a state teaching force be organized along the lines of the existing Teacher Corps. Such a force could serve on call by rural districts, core cities, or any district unable to attract talented teachers to cope with the special teaching problems in rural or urban disadvantaged areas. Intensive study of this proposal is recommended.

The Department of Education's Bureau of Systems and Data Processing personnel-payroll component can shortly be expected to be in operation. It will assist local administrators and also the Department and the Board to focus on teacher resource policy problems. Its data base and analyses drawn from it should be supplemented as needed by special studies to point up policy issues.

Fiscal Capacities, Costs and Needs

The data cited as supporting Chapters XIII and XIV of this report are examples of the kind of information needed in dealing with matters of fiscal effort and capacity, multiple sources of income, and expenditure patterns. The Educational Inquiry System should provide the Board, on call, with pertinent evidence related to obtaining and distributing the educational funds. The system should also sense emerging problems and bring them to the Board's attention.

A useful data base for business services and accounting is being developed within the Bureau of Systems and Data Processing. Scheduled for the future are tools for linking accounting data to educational programs and for revenue and expenditure forecasting--valuable service to local districts.

The Flow of Educational Method Improvements

SCPE consultants have deplored the time lag between the discovery of educational improvements and their introduction into the classroom. An Educational Inquiry System should promote the faster spread of technical knowledge. Sources for the data are widespread and varied and should include and not be limited to the following:

The State Curriculum Commission, as the oldest arm of the Board of Education, is a key force in the shaping of what is to be taught in classrooms. Its primary function is to examine and rate textbooks, a formidable task in itself. Theorizing that it cannot intelligently recommend textbooks unless some standards and course outlines for the particular subject matter in question are established, the Commission has in recent years expanded to fill what appeared to be a vacuum. By statute, it is required to study problems of curriculum and recommend standards for Board adoption in Title V of the Administrative Code, relating to subject matter in the schools.

Thus, it assembles from time to time ad hoc teams of experts from the profession to prepare what it calls a "framework" for each of the subjects taught in the schools. It now has under way, assisted by Title V ESEA funds, framework studies in social sciences, science, and English. It will probably in the near future reactivate a committee to deal with mathematics. Framework studies eventually provide a guide to local districts for what should be covered in the course affected.

SCPE earlier recommended establishment of networks of two innovative kinds of schools, which it calls Experimental and Demonstration. Their function would be the trial and assessment of new approaches to educational problems in a variety of settings. SCPE also recommended redirection of the teacher training to stimulate innovative teaching.

New research developmental agencies funded in California under various provisions of the Elementary and Secondary Education Act should provide findings for the Educational Inquiry System. These agencies include the Far West and the Southwest Laboratories for Educational Research and Development, the network of county-based Supplementary Education Centers, and the U. S. Office of Education "policy center" to be operated under contract by Stanford Research Institute.

A. D. Little, Inc., recommended in its study for the State Board the establishment of a Bureau of Research in the Department of Education.

These sources should help the profession and the State Board to keep pace with developments. The Board has a particular obligation to incorporate improvements into State education policy and to seek, where necessary, legislative interest in new methods which give promise of meeting high priority needs.

These listed information sources belong largely within the family of professional schoolmen. SCPE has also found it helpful to sample the thinking in the academic disciplines and to observe educational technology, much of it experimental, being tried in business and military training.

The Public Interest and Public Attitudes

Board members and administrators, teachers and concerned citizens take on many tasks of informal leadership and policy influence. Common to these relationships is a commitment to education, although controversies are frequent and there is a certain inherent tension between professionals and interested laymen.

Both professionals and lay leaders in education must face and understand the many groups and interests which compose the public. Voter influence--on board elections, tax overrides, bond issues--is powerful indeed in the tradition of localism of American schools, and sensitivity to the voting public is properly a part of life in the State Capitol.

No less important than the task of generating voter support for educational programs is the obligation of educators to understand public attitudes as a real influence on the educational process itself. Millions of California parents, dealing with their children, do much to determine whether the job of teacher and administrator will be hard or easy, and to set the climate in which the values of education will be judged.

Better to understand public attitudes toward education, SCPE contracted for a substantial opinion research study. Some findings confirm long-held common-sense interpretations. Other findings are challenging, even startling. SCPE believes the potential value of public attitude research has been demonstrated and urges that this tool be incorporated into the Inquiry System.

Public attitudes are an important part of the landscape before the educational decision maker. This does not mean that opinion research findings make policy. Professional knowledge and board members' judgments properly control many choices. Yet communications' gaps sometimes do exist between the decision makers and the public. It is the latter's obligation to effect public understanding where it is lacking.

What has been done so far is only a beginning in uses of opinion research. It will be important to measure attitude differences toward education in different segments of the population more precisely.

Long-Range Forecasts in the Inquiry System

The crystal ball often is cracked or cloudy, so SCPE avoided taking any single fixed view of the future. Partly because of the pace of change and its uncertainties, SCPE recommended that educational effort bear strongly on fundamental skills and the development in each child of creative ability to solve problems The child who thinks for himself can best cope with whatever the future brings.

This does not, however, permit us to ignore forecasts, although it argues for their continuous adjustment to take note of new information. The risk of error is accepted because it is estimated that a greater risk is undergone by foregoing predictions altogether.

All levels of government and industry rely on the demographic predictions produced in the State Department of Finance. Migration into the state, rural-urban and central city-suburban population shifts critically influence education and should be studied and interpreted for the State Board. Scarcely less important are the extent and growth rate of racial and ethnic minorities and their anticipated concentrations in metropolitan areas. Parents' income, occupation, and education level influence educational needs of children and should therefore be considered in conjunction with profiles of the student population's characteristics. Family movement between attendance areas affects the operating pattern of the schools.

The State Board ought to have the benefit of analysis of the changing educational needs implied by these population data. Economic and technological changes affect population shifts, housing starts and tax capacity. They have implications for school curriculum, in particular technical and vocational education.

Part (but only part) of education concerns fitting children to their occupational choices. To explore potential uses of manpower projections and occupational forecasts, SCPE obtained a study by a manpower economist. Such studies, continuing and selective, may be a useful component of the Educational Inquiry System.

Finally, it is wise to have a periodic reading of trends in human knowledge itself. SCPE sought this by various means, including interviews with selected respondents in the academic disciplines. The net could be substantially wider. The purpose would be to perceive where knowledge may be leading society and to alert policy makers to gaps between what is taught in classrooms and what is happening at the frontier of knowledge. The national convulsion over introducing the so-called New Math might have been avoided had schools been in communication with mathematicians.

Identifying and Diagnosing Needs; Current Examples

Stockpiles of statistics are of scant worth. Rather, decision makers should be provided an array of information which works to thrust forward areas and issues requiring attention. SCPE has stressed needs of the individual student, and schools indeed should gear their programs to individual needs as quickly as possible.

Presently, the education system can go wrong for whole groups of students. Findings cited to SCPE of the breakdown in the education of disadvantaged children led it to several major recommendations. Further, it may be possible to arrive at practical and definite criteria for bringing about educational reform and improvement.

Two examples are offered:

1. Correction of socio-economic imbalances will be achieved when the average level of educational performance and its dispersion and range do not substantially differ from one school to another. This proposed criterion has been reported by a SCPE consultant to the State Board. A proposal for legislation appears in Appendix H.

2. An Urban Factor formula is proposed as a means to correct deficiencies in revenue resources which impede effective education in the big cities. There are several ways to construct the formula. The point is that a sensible criterion is possible.

Long-Term Problems and Immediate Symptoms

The high school dropout phenomenon is only too well known. (SCPE consultants estimate the rate currently is one in five.) To rescue the several hundred thousand young Californians likely to be defeated by conventional education in the next few years is a worthy objective. It may imply a need for extensive experimental work-oriented or other unconventional kinds of education.

Yet, SCPE finds the problem rooted not so much in the way high schools operate (true, they do need improvement) as in cumulative effects of educational deprivation and defeat from the earliest grades on.

Two strategies, one for the long pull and a quite different one for today's potential dropout, seem required.

SCPE urges that the Educational Inquiry System be designed to undertake exploratory analyses that are linked boldly to policy issues--studies capable of uncovering new and significant policy questions as well as providing help in solving those problems already known.

Organization of an Educational Inquiry System

SCPE has centered its study on two models of an inquiry agency, which it terms respectively a Professional Educators' System and an Open System.

The Professional Educators' System would be essentially self-maintaining. This chapter has pointed to its building blocks: the Bureau of Systems and Data Processing; the Bureau of Research proposed by Arthur D. Little, Inc.; the various federally aided research and development centers in California; SCPE's Experimental Schools network; the Curriculum Commission; and research staffs of school districts and their communication links with the Department of Education and the State Board.

It appears essential to invest heavily in these professional efforts and provide them recognition and leadership. Long-range planning efforts require continuous professional attention, both to generate the needed data base and to extract useful interpretation.

If the Inquiry System were to be wholly operated by and for the professionals, they would still need to seek information from external sources--for example, contract for periodic studies of public attitudes and obtain critical judgments from leaders in the academic disciplines.

It is possible that the State Board could define areas of policy study important to it and count on such a system of inquiry to provide analysis and recommendation. Indeed, in normal operations at the present time, the weighty agendas for Board meetings show a steady march of reports and operating recommendations of just this kind. But the Board would need some staff of its own to prepare and define areas of urgent policy study.

There would seem to be several potential difficulties if the system were developed from existing ingredients to become a full-blown Professional System.

1. Present Department of Education bureaus and the large district staffs are burdened with existing business.

2. Some kinds of specialized skills not easily retained by school districts or the Department are required. This suggests use of outside consultants.

3. Internal professional management may find it hard to maintain breadth of contact essential in gathering information and judgment from a variety of sources.

4. Perhaps most important, an internal system might be so afflicted with existing constraints that it could not free itself to look at long-range issues.

An Open System would use many of the same building blocks. The Bureau of Systems and Data Processing would be indispensable, for example.

SCPE's own experience in working for the State Board leads it to recommend a citizen's group as a crucial element of an Open System.

Its tasks would be:

1. To consider long-range broad policy calling for data and analysis cutting across areas of administration and specialization and not constrained by too much concern for instant workability.

2. To manage studies by outside consultants as well as combine them with analyses from within the Department of Education, which might assign personnel from time to time to consult with the group on policy issues.

3. To maintain a wide communication and sensory mechanism.

4. To make public its findings and recommendations.

5. To be on call to consult with the Legislature and professional organizations in support of the recommendations.

The main reason for the citizens' group is to serve as an arm of a State Board too burdened to do these jobs itself. The citizens' group would do its best to think in terms of the policy mandate of the Board. Its powers would be only advisory but it would be capable of stimulating new policy approaches to be taken to the Board.

Location of the Open Inquiry System

The policy group would be best located outside the Department of Education, and answerable to the State Board. Thus it would be freer to focus on issues of concern to the Board, even though these were not appealing subjects of study to the Department or to the Superintendent. In effect, the Commission would be an information agency parallel to the Department. The Board would, in any event, have its usual access to information and analysis coming to it through the normal channels of the Superintendent and the Department.

SCPE's own experience leads to some cautions about external location and mode of organization.

1. California state government administrative machinery does not easily adapt to "project" operations. Regulations governing contracts, personnel, and other matters caused delays and difficulties from time to time, despite the expert administrative liaison of a number of persons within the Department of Education. So far as statutes and regulations permit, it would be de-

sirable to have a separate type of "project" organization for administrative purposes.

2. It was possible for SCPE staff and consultants to maintain a degree of contact with departmental staffs. Although this was less than would have been probable had SCPE been organized within the Department for reasons stated earlier, SCPE still prefers an external location.

3. A commission drawn from a variety of professions and levels undergoes a substantial setting up time preparing for its task. Over time, some members are obliged to withdraw. There is some instability to this. Further, at least a small staff of professionals is required.

A variety of membership has been valued in SCPE's own experience. Sufficient variety in terms of geography and occupational differences could perhaps be achieved with 12 to 15 persons. If members have other obligations, a term greater than three years might dissuade qualfied people from accepting service.

CHAPTER XIII

ISSUES IN FINANCING EDUCATION

SCPE Recommendation--Local districts and the State should plan major performance advances in elementary and secondary schools, on the assumption that expenditures per child can at least double in the next five years.

Equal access of all children to quality education is fundamental in all recommendations of the State Committee on Public Education. The Educational Inquiry System described in Chapter XII will help define priorities and provide a full flow of information indispensable to the wise use of public wealth to provide quality education.

Until that time when the inquiry system is functioning, additional state funds should be channeled to obviously high priority goals. These may include the strengthening of central city schools, assumption of the cost of pupil transportation to assist integration plans, special assistance to rural, core city, or other districts unable to attract qualified teachers, and support of local district plans for professional development of the instructional staff.

To support this effort both state and local sources must be tapped through an improved statewide tax program. A doubling of the investment is believed necessary to insure an educational experience fitted to the individual pupil's needs. The state should also provide additional financial incentives as a stimulus to districts to set improvement goals for each school.

Two Questions: How Much? and Where and How?

It is convenient to divide the discussion of finance in two parts; the first one dealing with the determination of how much money from federal, state, and local sources should be spent statewide on education. The second question is how to distribute this gross sum to the different geographic areas of the state and among the different functions performed by local districts. The two parts are: (1) how much? and (2) where and how?

Since these questions are much too important to be decided by rule of thumb, historical precedent, political expediency, or simple inadvertence, the obligation is underscored to design a system of educational inquiry for assisting in resource allocations. It would be a major step forward for the state to acknowledge the significance of measurement and analysis in deciding how to spend educational resources.

However, it will require time to build a system of educational inquiry; and in the meantime, it is important to use information at hand, limited though it is, to suggest changes in allocations to educational services and in their geographic and functional distribution.

1. How Much to Education?

Between 1958-59 and 1965-66, the general fund income of elementary, secondary, and unified school districts increased from $1,276,847,582 to $2,452,179,194, a rise of $1,175,331,612. This rise of $1.2 billion is associated with a combination of growth in student population, inflation, and improvement in quality. The interesting question is how much money was available to buy extra quality of instruction? We cannot answer the question with precision, but we can see the general magnitude of resources available for quality improvements. During the seven years 1958-59 to 1965-66, school income per student advanced from $418 to $571. After allowing for inflation, we can say that the real income per student rose from $413 to $453 (on a price level base of 1958). Hence, whereas the general fund income of school districts advanced by 92 percent, actual income per student went up by 37 percent and real income per student by only 10 percent--or about 1 percent a year.

Assuming a length of school year of 180 days and a school day of six hours, there was spent per student a sum on instructional services (teachers' salaries, salaries of specialists and aids, books, classroom supplies, etc.) sufficient to provide resources of actual value of 26 cents per hour of class time in 1958-59. By 1965-66 this figure had risen to 37 cents. Deflating these figures yields the result that the real increase in instructional services per student hour amounted to 3 cents from 1957-58 to 1965-66. Clearly, the gain was much less than 1 cent a year per student hour.

In the years dating from 1957, the country has accepted two points of view about education: first, that the survival of the United States as world leader depends on its capacity to discover and nourish its sources of "brain power;" and second, that education is a primary instrument to improve the lot of the disadvantaged.

These attitudes place major and serious responsibilities on school districts. Yet, except for the introduction of certain new curricula, e.g., those in mathematics and the physical sciences, the schools seem to be approximately in the same condition they were seven years ago. This shouldn't be surprising, since the cost figures presented here show no marked shift of economic resources to school districts, once growth and inflation are accounted for. Education gives the appearance of a tradition-bound industry spending the bulk of its money on teachers' salaries and very little on books, materials, and technical aids to instruction. It is hard to be confident that a substantial productivity advance will occur as a spillover from technical advances in the rest of the economy. The Committee holds that these advances must be purchased by larger state and local investment in schools, and it believes equally that productivity increases stimulated in education will exert great leverage on the vitality of the economy and the quality of life in California.

In the 1966-67 school year, 67.8 percent of California classroom teachers held no higher degree than the bachelor's. Only 2.7 percent had an undergraduate major in mathematics and only 7.7 percent in the natural sciences as a group. Persons who do not take their undergraduate major in mathematics or natural sciences are unlikely to earn higher degrees in these subjects. Therefore we must conclude that the formal training of California teachers in these fields is limited. Yet, surely mathematics and science are of supreme importance in a technologically advanced nation. Good instruction in these fields, moreover, stimulates the academic motivation of young males not attracted to literary subjects.

Over 70 percent of elementary and junior high classes had between 26 and 35 students, and 42 percent were over 30 pupils in size. The average size of high school classes in both mathematics and science was 29.[1] Expenditures on textbooks, library books, and journals, and expendable supplies of instruction amount, typically, to less than $30 per student a year. These facts are not descriptive of a vital, high-achieving progressive educational service. Nor does California offer to minority students the stimulation that appears to flow from attending an integrated school, except in a few districts. In the fall of 1966, 85 percent of Negro students in the eight largest districts of the state (those districts enrolling 63 percent of all Negro students in the state) attended minority schools.[2]

Two years' testing of primary grade pupils under the Miller-Unruh Basic Reading Act reveals that California pupils achieve below the national averages. More interesting are the results published in late 1967 and early 1968 by the San Francisco and Oakland Public Schools (who should be given credit for their courage in giving the public the facts). In 1966-67, 15 of San Francisco's 79 elementary schools showed a median grade placement in reading for sixth graders of 4.5 or below. In Oakland, 29 of the 63 elementary schools were similarly affected. When students fall a year or more behind their grade placement before they complete elementary school, their subsequent education is likely to fail. For those students to gain marketable skills in an increasingly technological and literate society requires more "catching up" than most can achieve. Yet, an alarming number in two Bay Area cities are one or more grades behind by the sixth year of schooling. We do not suggest that education in these two cities is deficient by comparison with other districts. Indeed, the statewide reading scores released this year by the Assembly Education Committee reveal widespread areas of distress in California schools.

Educational expenditures will continue to rise in California. Enrollment increases make it inevitable. Even without enrollment pressure, practices of school districts in competing for teachers' services, together with the militancy of organized teachers' groups, assure that teachers' salaries will continue to go up; historically, salary increases have been the major element in pushing educational expenditure per student upward. But it is important that California advance in quality of educational services, that schools five years from today are, indeed, better schools than those we see about us.

Better education in early grades reduces the need for costly--or often wasteful--remedial instruction. In Chapter XI we noted one way of justifying improved educational quality can be a comparison of the cost of improved services with the value they add to lifetime incomes of graduating students. More specifically, Appendix D shows that California in the future will be less able to rely on in-migrants to meet its needs for high-level manpower. High-level manpower in good supply is necessary for the expansion in California of high-wage employment opportunities for the entire work force. Better schools would qualify a higher proportion of low-income students for college entrance, thus making college student bodies more representative of the social backgrounds of the population at large. Better schools will also help assure that a higher proportion of entering students succeed and become graduates, finally, of our colleges and universities.

How can quality education be obtained, given our record of seeing the schools' increased dollar allocations swallowed up by higher enrollments and inflation? Gains in quality will not appear, simply, in the ordinary course of events. But in spreading its resources over public education, there are three steps the state should oversee. Before describing them, the main existing sources of school revenue should be considered.

School revenue sources. In 1967-68 it is estimated that in California 61.3 percent of revenue receipts of local school districts will be drawn from local revenue sources (mainly property taxes), 34 percent will be apportionments from the state, and 4.8 percent will be federal grants. The distribution between local and state revenue sources varies widely among the states, but taking the 50 states and the District of Columbia together, the respective shares in 1967-68 are estimated to be 52 percent local, 40.3 percent state, and 7.7 percent federal.[3]

Federal grants for local education services are mainly for specified purposes, and each such specific aid is self-limiting in size of dollar commitment. Short of a staggering proliferation of specific aids, there appear to be only two possibilities by means of which the federal government can assume a substantial financial role in public education:

On the one hand, the federal government could distribute funds in general support of local schools. To do this, the federal government needs reasonable assurance that the extra sums it provides will be used by the respective state governments to raise the quality of education. States as a group have been unable to make a convincing case on this point so far. This could induce the federal funders to by-pass the state and aid local districts directly.

Secondly, there is considerable bi-partisan support for the federal government's sharing of its extraordinary revenue capacity with the states in the form of block (or general) grants. Professor Walter Heller, formerly Chairman of the Council of Economic Advisors, is one well-known proponent of this approach. On the possibility that California in the next few years might come to receive several hundred millions of dollars annually in the form of block grants from the federal government, it behooves those interested in quality education to make realistic plans to claim an appropriate share of these funds.

It is clear, however, that presently education in California, as in most states, is financed chiefly by state and local governments. The State of California already has assumed a substantial share of the costs of education, and decisions at the state level about educational services are significant in shaping local decisions. Moreover, local taxation itself is strongly influenced by the state, since local taxing authority is regulated by the state Constitution and statutes. Because of this financial relationship, the State bears major responsibility for improvement--or the absence of it--in educational services.

Improvements in the total allocation. As we stated, we believe the state government should oversee three major steps in improving the total allocation to the educational services.

First, the state should set a target figure to represent what might prudently be spent on educational services.

Second, the state should arrange that a series of well-devised educational improvements be priced and defended before the Legislature.

Third, state educational authorities should exert leadership to assure that additional school money is used to buy quality.

We know that spending additional money in education may bring little in return. Gradual increases in existing, seniority-based salary schedules are not likely to yield much in educational improvement, especially when top teaching salaries remain far below what the successful male college graduate earns elsewhere. There is evidence that modest reductions in average class size--and even modest reductions are expensive--fail to improve pupil performance. After all, a teacher is likely to do about the same thing before a class of 28 as he is before one of 30.[4] Occasionally, a district may spend heavily on a supposed panacea and find that it has thrown its resources away--education has not been free of faddism.

Unfortunately, the education interest groups make their annual presentations to the Legislature as if the schools face financial crisis. Instead of showing what the citizens can have in the way of clearly defined educational improvements, the education lobbies suggest that unless large additional funds per student are voted, existing school services will have to be cut back. Neither piecemeal budget change at the local level nor the crisis technique of dealing with the Legislature is conducive to achieving higher levels of educational productivity.

However, mere exhortation to achieve a more efficient deployment of professional staff in the schools is likely to be unavailing unless additional funds are available to employ specialists and retrain teachers. Truly impressive gains in output will occur as and only as school districts make innovations in programs. Innovations, though likely to be costly, are also likely to yield great benefits for the citizens of California.

What do innovations in programs cost? We shall now consider some illustrative figures. First, however, let us recall that the general fund income of California school districts in 1965-66 was $2.5 billion.

To provide one hour per school day per student of high-grade computer-assisted instruction would cost at least $2.7 billion at approximately current prices of computer systems. (Cost per student, $640.)

To have had one additional specialist teacher at an annual salary of $12,000 for each 100 students in 1965-66 would have cost $515 million. ($120 per student.)

To offer one-third of the high school students of the state the kind of summer programs that would stimulate their interest in science and technology would take about $400 million. ($620 per student enrolled.)

To provide a year of retraining for a tenth of the teachers in the state would have cost about $170 million at 1965-66 salary levels. ($39 per student.)

To present one hour per day of well-prepared instructional television per student would cost about $60 million. ($13 per student.)

To choose from an array of costly innovations has required, up to now, exceptional judgment. However, we are beginning to get evidence of what does work in education. The 1967 Annual Evaluation Report of the California Office of Compensatory Education, reports that the Office has identified effective programs in reading. The common element of these programs can be described with reasonable precision:

> Remedial reading projects in which students with severe reading disabilities showed more than a month's achievement gain for each month of participation had the following characteristics:
>
> Students received reading instruction from a remedial reading specialist. Some projects also included the use of an aide to assist the specialist.
>
> The organizational system included extensive diagnostic services to identify causes of reading and/or learning deficiencies and specify remediation techniques. Some districts also developed case conference techniques using a variety of specialists to determine the causes of reading and/or learning difficulties. Case conferences included recommendations and observations from the nurse, reading specialist, classroom teacher, counselor, teacher aide, and school psychologist.
>
> The pupil-teacher ratio during remedial reading instruction was five to one or smaller.

The organizational system provided for frequent communication between the reading specialist and the classroom teacher to discuss individual students.

The organizational system used more than one method for remedial instruction. The focus was on finding methods or techniques which were successful with each individual student.

The student received instruction in a room specifically organized for remedial reading instruction. The reading laboratory, also called a language laboratory or reading clinic, contained a variety of mechanical and printed devices which enabled the individual student to proceed at his own pace in remediation of a specific deficiency. Immediate assistance from an aide or a reading specialist was available when the student was not successful.

The average cost was $252 per student (just for the reading program). To provide these high-quality programs for all students in grades 1-3 would have cost $329 million; a similar sum might well be spent on high-quality mathematics programs in grades 4-6.

Indeed, there appears to be one central aspect of those relatively successful educational innovations of recent times--team teaching, ungraded primary, computer-assisted instruction, language laboratories--and that central aspect is individualization of instruction. Progress toward individualizing instruction clearly could require a doubling of real resources in education.

Consider the following points in setting a target for expenditures: In 1965-66 the general fund school income per student in California was $571, including money from local, state, and federal sources. Assume a decision to increase school support, so that by the fifth year after the 1967-68 school year the real investment per student will be doubled. Taking account (a) of projected enrollment and (b) of the fact that historically the purchasing power of the school dollar is subject to a higher-than-average rate of inflation, we determine the amount of dollars required in 1973-74 is $6.5 billion. Assume that educationally disadvantaged youth should receive an extra 50 percent of school services (as was intended by the Elementary and Secondary Education Act, 1965) and 20 percent of California youth to be educationally disadvantaged. Correcting for this extra cost raises the educational bill to $7.2 billion in 1973-74. Assume 10 percent of educational expenditures are met by federal grant. Thus, state-local tax levies would amount to $6.5 billion.

The sum of $6.5 billion would be approximately 6.7 percent of California's projected real personal income in 1974. In 1965-66 state and local tax levies for the elementary and secondary schools were approximately 4.1 percent of California's personal income. So to gain a doubling of real resources in education requires a diversion of 2.6 percent of California's total income toward schools. This would be no intolerable burden on its citizens.

Because there is a choice of spending money wastefully or productively in education, we have suggested the second step; namely, that after the state government has expressed a willingness, though not a commitment, to make a big jump in school spending, to ask the educational authorities in the state to come forward with improvement plans, plans that will show the dollar cost of different ways to individualize instruction.

Then, third, it would be necessary that the education authorities provide convincing evidence that extra school funds would actually be used for educational improvement. In the past, too much responsibility for educational policy has gravitated by default to the Legislature. Now power is shifting to organized teachers. Large monetary increases could be absorbed in improvements in teacher welfare and have only minor effects on school performance.

To summarize: the state can increase its school spending enormously in response to conventional pressures while not at all changing school quality. Or the state can offer to finance major advances in quality if school authorities show how a jump in spending would meet the goal of fitting instruction to the aptitude and interest of each student.

2. Where and How is the Money Spent?

Between 1958-59 and 1965-66, apportionments from the state school fund (by far the largest share of state school aid) rose from $575 million to $994 million. For 1967-68, the sum of $1,246 million was appropriated by the Legislature for the school fund.[5] In spite of these large increases, we find certain school functions remain characteristically short on fiscal support; certain areas are insufficiently funded; inter-district differentials in local school tax rate are startlingly great; and, finally, there is no close connection between the flow of state funds and school improvement.

To take up the last point first, consider that school apportionments in California (and in most other states) are based mainly on two factors: a count of student attendance and local taxable capacity.

There is no important incentive built into the grant system to encourage teachers and administrators to work hard. There is no recognition at the state level given to any school for outstanding performance. This is a shortcoming of the present system of grants.

Moreover, while effectiveness of a school reflects, in part, the quality of leadership of the building principal and his administrative assistants, school districts have not devised fair methods of grading the performance of middle-level administrators as it works an improvement in pupil performance. In nearly all districts rigid formulas determine the allocation of funds to all schools the district comprises; no flexibility is allowed under which a given school can forge ahead in meeting the needs of students. The conformity implied by centralization of control, so deplored by local administrators appearing before legislative committees, is a standard of practice within districts.

We suggest, then, a state "education improvement fund" to stimulate advances in school performance. The entitlement of school districts would be calculated on the basis of a weighted student population formula, with the weights possibly recognizing the relative socio-economic standing of districts. To get money from the fund, a district would be required to enter into a contract, renewable every three years, under which objectives are stated school by school. Improvement goals should be stated for middle-class and ghetto schools alike, though objectives would surely vary from one school to the next. For example, a school serving disadvantaged students might elect to raise student accomplishment in reading, mathematics, or other basic subjects, while a school whose classes were filled with intellectually advantaged students might set as goals course work for the gifted and the further development of aesthetic skills. Parents whose children the school serves should be listened to in setting objectives for that school.

Progress toward improvement goals for each school would be measured in two ways: "value added" and "follow-up." Value added would be the measured gain in achievement experienced by students from the time they entered the school to the time they left. That is, if a student entered the third grade and left at the fifth grade, the school would be accountable only for his progress during these two years. It would seem desirable to establish categories of achievement level and to relate incremental gains in a given school to district-wide average gains in some historical period, level by level of achievement. This would get around the difficulty that high-achieving students cannot, under present measuring instruments, show large increases in performances.

Follow-up would be a process of judging any given school by the performance of its students at the next higher level of education, whether this be junior high, liberal arts college, armed forces, or on-the-job training. Measures of performance in terms of follow-up should be diverse-achievement, conventionally measured, in basic subjects (where appropriate), grades, stability of attendance, job advancement, etc.

The objectives of school improvement grants are several:

1. To establish a cash intertie between the state's interest in seeing school districts move toward higher levels of performance and the grant-earning capacity of local districts. In the past, state incentives to school districts have emphasized process variables such as paying teachers higher salaries or reducing class sizes, or establishing school libraries. The present proposal emphasizes performance criteria to earn extra and continuing grants.

2. To encourage schools to think in terms of establishing their own operational objectives, at least some of which are measurable quantitatively.

3. Similarly, to encourage schools to consider differing means to accomplish the stated objectives.

4. To encourage the administration of each school through the follow-up to discover for itself what it needs to do to link its programs and those of the next higher level of education, recognizing that at the secondary level standards differ for different students. That is, school administrations would be offered an incentive to be concerned about articulation, rather than relying upon central office coordinators to achieve links among programs simply by exhortation.

5. To provide a measure of school progress that emphasizes more strongly the position of a single school against its own standing at the earlier point of time, than it does the position of the school vis-a-vis other schools.

It would be a feature of the program that follow-on grants would be offered to maintain programs proving successful.

Special Problems: Training and Transportation

Now, two problems in the functional allocation of expenditures. The first is expenditures for the continuing training of teachers. Most financial relationships between the federal government and institutions of higher education are expressed in contracts in which the federal government undertakes to purchase a given amount of research and training. The direct costs of performing the work are estimated. The university, say, in which the work is to be done adds a stated percentage, often 35-40 percent, called "overhead," for the use of its facilities and staff. Such contracts are not common between the higher governments and elementary and secondary school services. Yet, the device would offer advantages.

First, it would be much more likely that the government issuing the contract would be made aware of the full direct and indirect cost of services performed. As it is now, when local governments respond to the mandates and the incentives of the higher levels, they almost always themselves absorb part of the costs even when it is supposedly a 100 percent grant. Second, the contractual arrangement makes it clear where the initiative for new programs lies. For example, when the federal government gives grants for education of the disadvantaged, local authorities are supposed to act as if they would themselves have instituted the programs had they the money, etc. This raises the possibility of friction between local schools and the electorate and between local authorities and higher levels of government. Under a contract the electorate would see that the local schools were simply carrying out a request of the higher government at no cost to the local district.

Various models of student achievement, themselves being early ventures into operations analysis of education, have indicated that the most important variable affecting student performance, once the home backgrounds of the student and his peers have been taken into account, is the characteristics of the teacher, and, especially, the training of the teacher himself.[6] Can we expect local districts to spend substantial money to retrain teachers? Districts see that success in retraining simply gives their teachers more appeal to recruitment officers elsewhere. Indeed, in California in-service training of teachers is not seen as a serious enough function of school districts to rate a budget account in the system of state financial reporting. This means we do not know how much is spent on retraining. Observation indicates the amount is small. For these reasons the State should contract with districts to meet full costs of well-planned programs for professional development of teachers.

A well-planned program would: first, concentrate on methods of instruction in an actual classroom, where the trainee can observe superior practices and himself work under the observation of outstanding teachers; second, provide background in the behavioral sciences, especially those relevant to an understanding of learning processes; third, offer opportunities for teachers, especially in fourth and higher grades, to receive the best instruction in their academic subjects. The latter is not easy. Courses by regular instructors in university academic departments are not scheduled conveniently for the school teachers, while courses in extension and summer sessions sometimes are not of high academic quality. Prerequisites in upper division and graduate courses, especially in fields like mathematics and science, are often unrealistically high for the school teacher. These problems could be surmounted if local districts, on the one hand, and colleges and universities, on the other, joined in planning academic programs for teachers. Only by periodic study can teachers keep up in their fields and fight boredom induced by long years of teaching conventional subjects.

There is a more fundamental objective. Suppose such good programs of continuing training can be devised that the courses, etc., taken by teachers demonstrably improve their classroom performance. In that happy eventuality, it should be possible to develop salary schedules to distribute pay primarily in accordance with the level of professional development reached by a teacher, in contrast to the existing schedules that chiefly reward seniority. Accordingly, incentives would be established between the administration of a district and its staff to guide teachers toward a higher level of classroom performance.

A second problem in allocating resources according to function concerns pupil transportation. Evidence indicates that, second to his own home environment, the most important determinant of a student's learning is his fellow students. Under proper conditions it can be arranged to exploit this fact to raise levels of school performance. That is, disadvantaged students can be stimulated by high-achieving peers, while at the same time advantaged students suffer little or no loss of attainment. Minority group students are unevenly distributed among districts. Among districts that do have large numbers, willingness to attack the problem of integration varies. To achieve integration it is often necessary to spend rather heavily on student transportation. This particular kind of expenditure is a lightning rod that draws the outcry of the anti-integrationists. They may argue that money is "wasted" on transportation which other districts could use for quality education. And, indeed, districts trying to integrate really do need to spend every penny on quality in order that integrated classrooms maintain a proper pace of learning.

In 1965-66 California spent $51 million on transporting students in elementary, secondary, and unified school districts. About a third is already provided through categorical state aid. Transportation expenditures already are fully subject to cost analysis in the local districts. It would be simple--and not terribly costly--for the state to reimburse districts in full for their approved transportation expenses, and we believe there is a good reason for the state to do so; namely, to remove a troublesome obstacle in those districts seeking to integrate schools. State sharing of transportation costs has long been recognized as necessary to good rural education. It can now be seen that greater state responsibility in pupil transportation is essential to improve central city schools.

Geographic Distribution of State Funds

Difficulties beset geographic, as well as the functional, allocations of resources. Chapter XIV deals with districts having symptoms of urban decay. Here, on the other hand, we draw attention to the needs of rural districts to improve their standards, relative to metropolitan areas, in teacher recruitment. This topic is considered at length in Appendix F, and policies to improve teacher recruitment in rural areas are discussed. Of greatest immediate promise is recognition of the state's responsibility to provide rural districts--and core city areas, also--with a cadre of well-trained teachers.

Fairly Sharing the Costs of School

The last topic in finance in this chapter is inter-district differences in local school tax rates. States established grants to local authorities to reduce differences in tax rates. In California these differences are still amazingly large. In 1965-66 the range was from $1.25 per $100 of assessed valuation to $7. Often, differences are "perverse;" that is, high tax rates are associated with low expenditure school programs (expenditure per student, of course) and low tax rates are found in districts that have exemplary school programs. For example, in 1965-66 among unified districts in the one county of Los Angeles, El Rancho had a school tax rate of $4.50, while El Segundo's because of a large tax base per student was $1.82 per $100 of assessed valuation. But current expense per student was only $548 in El Rancho, as compared with El Segundo's $753. This kind of situation violates the rule that there should be a direct relation between the level of a household's tax rate and the volume of local public services it is eligible to receive. A perverse relation can also reinforce the tendency of levies on property to be regressive.

There are several remedies. First, if the state government assumed 75 to 85 percent of local school costs, tax rate differentials would be greatly corrected. This approach does not appear politically acceptable.

Modest and gradual increases in the share of state support--for example, moving from the present 40 percent, approximately, to a 50 percent share--will not moderate inter-district rate differences significantly.

If unification and consolidation of districts were conducted on a scale sufficient to reduce local differences in taxable capacity, then clearly the tax rate differential no longer would be perverse. This approach does not appear practical at this time.

In the longer run, the problem can be got at by shifting local school taxation to a supplementary levy on the state income tax, together with adoption of a percentage-equalizing school grant. This tax device would be especially suitable for school districts. In the first place, the tax relates the supporting of school service directly to household income, and household income, is, perhaps, the best single measure of private returns from education.

Local additions over and beyond the funds provided by the state for basic education and for school improvement would almost certainly be reflected in private, as distinct from social, benefits. So households in a district would be called upon to make a prepayment of a small part to the yield of these investments in private returns and to make that payment specifically through a supplementary levy on income in support of the public schools. Further, a local income tax supplement would offer some advantages of the property tax in preserving local control, but it also would be free of some of its disadvantages.

The property tax, ordinarily paid as a lump sum, has high visibility, and this is conducive to fiscal prudence by administrators. As school districts receive much of their income in grants, that is, they spend "other people's money," such a safeguard is necessary. Even if state income taxes were subjected to withholding, it could be arranged that the local income tax supplement be paid as a lump sum at the time the state income tax form was filed. Indeed, the state could collect the tax and return it to the school district in which the taxpayer resided. Each district could notify the state of the supplementary rate it desired to levy on state tax liability (within a range of rates set, presumably, by the state) and each tax form could include an extra sheet bearing this information. Because the payment would be in lump sum form and easily calculated by the taxpayer as a percentage of his state income tax liability, compliance costs could be low and would remain low even when as is generally the case, school districts chose to change rates of taxation somewhat each year.

(Compliance costs, on the other hand, are not low when local governments independently use a local sales tax or a local income tax collected under payroll deduction; moreover, compliance costs rise when the local governments change the rate of the tax one year to the next.)

Since a tax for local schools obviously belongs to the district in which the taxpayer resides, and not the one or more in which he works, jurisdictional problems would be minor. The tax offers advantages similar to those of the property tax. At the same time, the income tax supplement, as already noted, would escape some disadvantages. Because the state income tax is mildly progressive, so a supplement would almost certainly be more progressive than the property tax. An income tax supplement would not, as does the property tax, penalize the consumption of housing. It should be emphasized that what is proposed here is that the householder's share of local school support be shifted to a supplementary income tax levy. Industrial, commercial, and agricultural firms would continue to make their contributions to school finance, possibly under a statewide system of property assessment and taxation.

This supplementary levy on income should be matched by the state government under a "percentage-equalizing" subvention. The state would share financially in local additions to school programs but to equalize revenue the state would share in a higher percentage of matching in poorer districts than rich. Given that the difference in average household incomes are not impossibly great from one district to another, it would be possible to have established a fully operational equalizing grant. For example, any two districts that chose to place a 30 percent supplementary levy on the state income tax liability for school support would, under the operation of the percentage equalizing state grant, produce the same number of dollars per student. There would be a one-to-one relationship between the level of the local supplementary tax rate and the level of school support per student, taking account of both state and local contributions.

The last measure, and one possible of immediate adoption, is the much-discussed statewide minimum property tax. Speaking of it, Mr. Alan Post, Legislative Analyst, made the following comments at the hearing before the Senate Fact Finding Committee on Finance and Governmental Administration, "Financing and Quality of California Elementary Education," December 14, 1966:

> It has two advantages: (1) It tends to make more nearly equal the contribution in dollars that can be used by a district to carry out what is a reasonably uniform kind of problem, educating youngsters; (2) On the other hand, it provides equity to the local taxpayer so that where he lives is not a circumstance that is going to cause him, in the one instance, where he has a $10,000 house, to pay two or three times as much property taxes as somebody, who by sheer force of circumstance, lives in the same kind of a house, earns the same kind of a living, but lives in another district that is more inadequately organized in the terms of the assessed valuation within the district. This has two major elements of equity in it. Therefore, it's equitable to the student in relation to the kind of program that he can get; it's equitable to the taxpayer in that he pays the same kind of tax to do approximately the same kind of job, no matter where he lives in the state.

There are various versions of the statewide minimum property tax proposal. Without going into details, the essential idea is that all districts would be required to establish a minimum rate of property taxation for schools. Very rich districts would produce more money at this minimum rate than their state-mandated foundation school programs cost, and the surplus between the yields of the minimum tax rate and the cost of the foundation programs would be paid to the state. The sum of these surplus funds would be distributed to the other districts of the state.

The introduction of a statewide minimum property tax does not represent, in and of itself, greater reliance on property levies to support the schools; it is rather a matter of evening out some of the peaks and valleys of local effort.

Nothing in it abrogates the right of a local school district to tax itself at higher rates for schools should it so choose. And we know that most districts would so choose. The final effect of the statewide minimum property tax proposal is to bring into the support of school operations taxable properties that are not presently carrying their fair share of education cost.

Plainly, an improved system of school finance can be achieved, in which both state and local revenue sources are placed more productively and equitably in support of school operations.

Footnotes

[1] California Educators: Their Preparation, Assignment, and Compensation, Senate Fact Finding Committee on Education, 1967.

[2] Racial and Ethnic Survey of California Public Schools, Part One, Bureau of Intergroup Relations, Office of Compensatory Education, California State Department of Education, 1967.

[3] Estimates of School Statistics, 1967-68, 1969, National Education Association.

[4] Coleman, James S., Equality of Educational Opportunity, 1966; Burkhead, Jesse, Input and Output in Large City High Schools, 1967; Benson, Charles S., et al., State and Local Fiscal Relationship in Public Education in California, 1965. Of course, it could be claimed that efforts to reduce class size gradually will eventually get the pupil/teacher ratio down to the point where pupils do begin to learn more. At the present rate of change in California, this will take at least a decade. It would seem better to try to get such flexibility that when a given group of students need to be in a small group for instruction in a certain topic they are and when a large group will suffice that, too, is provided.

[5] Of course, since the pupil count in the formula is average daily attendance, one could say that districts earn money as they reduce truancy. However, districts can reduce truancy by police action as well as by making the schools exciting and interesting to students.

[6] Coleman, Op. cit.

CHAPTER XIV

THE "URBAN FACTOR" AS A MAJOR ISSUE

SCPE Recommendation--The State of California in supporting public school education should recognize the distinctive fiscal problems of the large cities and should direct a greater measure of future increases in state allocations to those districts exhibiting symptoms of urban disadvantage.

State governments historically have favored rural areas in their support of local school services. The justification has been: (1) that education costs more in sparsely populated areas and, (2) that some rural districts lack fiscal capacity to meet their needs. Instructional costs run high because frequently it is unpractical to bring enough students together to fill classes of conventional size. Moreover, transportation costs are large.

Faced with such cost-increasing factors, rural taxpayers envied the property and income of city residents. They demanded "sparsity corrections" in state aid formulas, and legislatures obliged them.

Corrections for thin population distribution are the only geographically discriminatory provisions of school aid formulas in California and, indeed, in most other states. Yet, there is clearly a fiscal disparity between central cities and suburban areas. The time has come to deal in a more sophisticated manner with differences in needs and resources existing between school districts. This can begin as we recognize the precarious position of central cities and direct school funds more strongly to heavily urban areas.

The following discussion contrasts the positions of the five largest school districts (Los Angeles, San Diego, San Francisco, Oakland, and Long Beach) with the rest of the state. There are, of course, many other California districts similarly affected. We are convinced that a well-designed formula to recognize urban disadvantage will assist both large and small school districts found within metropolitan areas.

The Burden of the Cities

Increasingly, cities are the haven of the poor and the ill-educated. As statewide levels of household income and education rise, it is likely that the gap between central cities and suburbs in the residential distribution of wealth will widen. As California approaches the older states in the density of population, it appears to be repeating their experiences in flight of the middle class from core areas. As reported in the study of the Institute of Urban and Regional Development, University of California, Berkeley, Characteristics of Metropolitan Growth in California, 1965, high density areas have relatively high proportions of minority populations.[1] The five largest cities in 1966 had public school enrollments 42 percent non-white; the state average was 25 percent. Minority groups now account for 56 percent of public school enrollment in San Francisco, 70 percent in Oakland, and 44 percent in Los Angeles.

CHANGES IN SOCIAL AND ECONOMIC STATUS OF POPULATION[2]
IN 23 LARGEST METROPOLITAN AREAS, 1950-60

1950-60 Changes in	Central City (Number in thousands)	Percent	Suburbs (Number in thousands)	Percent
Number of families with more than $10,000 yearly income	+ 1,092	+ 322	+ 1,737	+ 762
Number of individuals over 25 years of age with one year or more of college	+ 360	+ 14	+ 1,709	+ 84
Number of white-collar workers	- 2	- .05	+ 1,735	+ 47

In 1966-67 the five largest cities of the state served 25.5 percent of the public school population, while at the same time they included 27 percent of children living in families receiving state and federal welfare assistance under the category, "Aid to Families with Dependent Children." Fifty percent of AFDC payments in California are made to households in the four counties--Alameda, Los Angeles, San Diego, and San Francisco--that include these five largest school districts. In 1966-67 the five city school districts accounted for 76 percent of expenditures on children's centers, and the concentration as children's centers is itself an indication of the prevalence of mothers in the labor force. In each of the five large cities, the proportion of households receiving incomes of less than $2,500 was greater than 16 percent (in Oakland, it was 20 percent), while in suburbs like San Leandro and Torrance, the proportion was 9 and 7 percent, respectively. This situation in California is simply a manifestation of a national development, as shown in the table entitled "Changes in Social and Economic Status of Population in 23 Largest Metropolitan Areas, 1950-60."

Alongside a shift in middle-class families from cities to suburbs has gone a deterioration in the fiscal position of the cities. Assessed valuation has been growing more slowly in the five cities than in the state as a whole. Between 1957 and 1967, assessed value in California of real and secured personal taxable property rose by 91.8 percent; the five largest cities had an increase during these years of only 70.4 percent. Again, it can be seen that this is part of a national phenomenon. Not only is new residential construction concentrated in the suburbs but increasingly retail establishments and "clean" industry are showing preference for suburban locations.

To provide a given increase in expenditures per capita, city tax rates are likely to increase more sharply than suburban. This will certainly be true unless the state directs its grant funds in proportionately greater measure to the cities, in order to compensate for the lag in local fiscal capacity. But what has happened? School aid, the largest form of state subvention, has actually been flowing in greater volume to the suburbs. In 1957 the five largest school districts of California received 21.2 percent of state school apportionments. In 1967 the cities' share had fallen to 18.4 percent.[3] The shifts of human and physical capital from central cities to suburbs has brought in its wake high tax rates for urban centers. Big City tax rates in California rank among the highest in the state.

An unusually large share of city funds are spent in such services as police, health, and environmental sanitation. In San Francisco, only 27 cents of the tax dollar is spent on schools and in Oakland, only 40 cents. In none of the five largest cities is the schools' share as great as 50 percent. What of the suburbs? In Marin County the schools' share of the local tax dollar is 61 cents, in Monterey, 61 cents, in Orange, 58 cents, in San Mateo, 67 cents, in Santa Barbara, 59 cents, and in Santa Clara, 61 cents. Assuming that schools are viewed as the most crucial local service, the middle-class householder clearly gets a tax bargain when he moves to the suburbs; he no longer need carry the load of making local tax contributions toward ameliorative services for the urban poor.

With respect to school expenditures themselves, there are further problems. As early as 1962, the New York Times stated:

> What should a city school system be expected to accomplish: Ideally, it must offer what has become a priority for the suburban schools: an academic program of excellence that will prepare students for college. But, in addition, it must do scores of other things not expected of suburban schools.
>
> This includes the Americanization of foreign and non-English-speaking children... urbanization of children who have moved in from the rural South; vocational training of large numbers of "non-academic" students; the education of large numbers of

ASSESSED VALUATIONS IN SELECTED METROPOLITAN AREAS, 1950 and 1964

Place	Assessed Valuation (Million dollars)	Percent Change 1950-64	Assessed Valuation Per Pupil	
			1964 Value (Dollars)	Percent Change 1950-64
Baltimore City	$2,806,981	+ 52.6	$16,816	- 3.5
Suburbs	2,998,590	+322.4	17,472	+59.8
Birmingham City	563,053	+ 83.6	8,530	+19.6
Suburbs	496,228	+153.7	6,505	+68.2
Boston City	1,460,000	- 6.9	17,515	- 7.6
Suburbs	4,675,724	+ 78.9	13,864	+ 2.8
Chattanooga City	230,690	+ 70.7	9,071	+31.3
Suburbs	192,903	+215.9	7,125	+78.8
Cincinnati City	1,783,446	+ 47.0	22,036	- 4.3
Suburbs	1,303,419	+193.6	18,462	+ 2.9
Cleveland City	2,943,667	+ 58.9	21,407	7.4
Suburbs	2,972,460	+179.7	19,150	9.9
Detroit City	5,162,088	+ 30.6	18,829	0.6
Suburbs	7,752,705	+272.1	14,085	25.2
St. Louis City	1,652,070	+ 12.9	17,045	-11.9
Suburbs	1,797,405	+363.0	13,334	65.8
San Francisco City	2,380,444	+ 61.1	15,452	23.9
Suburbs	2,937,536	+297.4	8,373	55.2

physically and mentally handicapped; and the task of acting as a virtual substitute for proper home care for thousands of slum children.

Faced with the need to supply tax money for a vast and expensive array of services in both the municipal and school departments, the city taxpayer has not been able to find the dollars to produce those advances in educational quality, e.g., "individualization of instruction," that could make racial integration of education a realistic goal. Evidence from San Francisco, Oakland, and Sacramento shows clearly, on the other hand, that schools segregated by social class are marked by extremely uneven levels of student achievement.

Preserving a Desirable Setting for Living

Attempts to attach the problem of low achievement by the device of compensatory education alone are proving very expensive, but pressure to improve low-standing schools cannot--and, we hold, should not--be turned aside. The surburbanite does not have to face this problem either; what he pays in school taxes goes mainly to support programs of a kind in which his own children participate--for example, college preparatory programs.[4]

Large cities are composed of heterogeneous neighborhoods, that is, neighborhoods in which the needs and desires for public services differ markedly. This feature of city life is basically attractive and, up to this time, a condition of strength in American life.

1. Only in a city of heterogeneous population can individual members of households develop their diverse aptitudes and interests. Cities allow differences in tastes among families and among individual members of families to be served and provide the setting in which the young can openly and approvedly be different from the old. Individual members of a household can express their interests through participation in activities that carry either no fees or very low fees. Suppose the young daughter of a middle income household decides she wants to go to Italy to study sculpture. This requires a major household decision about financing the trip and possibly the decision, initially, would be negative. In the meantime, the girl can study sculpture at a museum and Italian in adult education classes, all for pennies a lesson. Moreover, she can do these things anytime in the year, including the summer, and without modifying her main college program. But it is more convenient to do them, surely, if her family lives in a city large enough to have good museums and adult education programs rather than in a suburb. Fragmentation of local government and planless dispersion of the populations defeat one of the main objectives of public service in the metropolis--to provide the capacity to serve the individual tastes of members of households, free of any large cash payment, an objective important to keep in mind for the rising generations.

2. It is in cities that our best hope of breaking down separatism among races exists; indeed, if the flight of the white middle class to the suburbs continues the chances of reaching the goal of "one nation" may well be set back a hundred years. Those who desire to live in a multi-racial setting should not have the choice inadvertently closed by onerous fiscal burdens.

3. It must be recognized that the possibility of reducing school failure to tolerable levels is vastly enhanced when poor children can attend school with--or at least share in extracurricular activities of--middle-class children. When a middle-income household withdraws its children from city schools and places them in

> suburban schools, it is thereby reducing the educational opportunities available to poor youth in the cities. This loss in educational opportunities of poor city youth carries a private and a social cost but nowhere are these costs presented in such a way that they enter into the middle-income household's choice of residence. It would seem they should.

As it is now, the budgetary gap created by rising public expenditure demands and laggard growth in local tax base affects primarily the city dweller, not the suburbanite, because the state has not acted strongly to protect the fiscal position of central city areas.

The fiscal pressures on middle-class families in the cities can become too great, and this is especially the case when the middle-class family feels that in order to exercise its option to live in the city it must at the same time pay for the education of its children in private schools.

The state can take simple and direct action. It can reduce adverse fiscal pressure on city dwellers by directing an extra share of school apportionments to areas in the state in which populations suffer urban disadvantage. A number of other states have already taken this kind of action.

Using readily available and objective data, supplementary formulas can be devised to accomplish such a change in flow of funds. The data needed are (1) ratio of total tax rate to total school tax rate (as a measure of municipal overburden), (2) the ratio of total school tax rate to assessed valuation per student (as a measure of local effort to support schools), (3) variables to measure relative socio-ecnomic standing of communities, such as shares of households in the upper and lower quintiles of family income, and (4) density of population. A formula encompassing any three of these kinds of variables would direct a share of state apportionments appropriately to the five largest school districts and to other school districts that have characteristics of urban decay.

What is required is legislative intent to attack the problem of how to preserve the economic and social vitality of California cities while there is still time.

Footnotes

[1] For example, it is stated on page xvii of the Report that in the older census tracts of the Bay Area and the Los Angeles area a fourth or more of the population is non-white, while in the newer census tracts of these urbanized areas, only about three percent of the population is non-white.

[2] Racial Isolation in the Public Schools, U.S. Commission on Civil Rights, Volume I, Office of Government Printing, Washington, D.C., 1967, p. 20.

[3] Admittedly, there has been a drop in the cities' share of statewide school enrollment from 30.3 percent to 25.5 percent during these years, but the fiscal effect of this reduction in quantitative share of students is swamped by the expenditure requirements to meet the special educational needs of the rising numbers of lower income youth who populate the urban schools.

[4] In earlier years the city dweller gained some relief by overassessment of industrial and commercial properties, relative to residential. This was the way his "municipal overburden" was shifted to the suburbs. In California recent legislation has closed this avenue of relief.

APPENDIX A

CHARGE TO THE COMMITTEE AND MEMBERS OF THE STATE COMMITTEE ON PUBLIC EDUCATION

Financed from federal funds made available
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(Public Law 89-10)

APPENDIX A

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APPENDIX A

CHARGE TO THE COMMITTEE

December 9-10, 1965

TO: The State Board of Education

FROM: The Ad Hoc Committee on Title V of the Elementary and Secondary Education Act

SUBJECT: Recommending a Project to Assist the State Board of Education in Planning for Educational Development

Preamble

As the leader of educational enterprise in California, the State Board of Education should set educational objectives, and evaluate the success of that action. It should periodically request from the Governor, the Legislature, and the people the support necessary for public education and it should periodically report to them the accomplishments of the schools.

In order to meet its responsibilities fully, the Board should have a system for making systematic, continuous inquiries into the present and probable future educational needs of the people. The system should be so carefully constructed and so ably managed that it will inspire the steady respect and support of the Governor, the Legislature, and the people.

Therefore we recommend that there be created a State Committee on Public Education to advise the Board on the conditions and needs of the educational enterprise and to plan a permanent system of educational inquiry for the State of California.

I. Composition of the State Committee on Public Education (SCOPE)

SCOPE would be composed of 25 distinguished persons nominated by the State Board and invited by the Governor. The Committee would be an entirely lay group whose members would represent a cross-section of the citizenry of the State of California both geographical and by interest groups. No member should be appointed to SCOPE who currently serves on any of the present advisory groups, boards, or commissions now dealing with elementary and secondary education in the State.

II. Organization of the Committee

From among the membership, the Governor shall designate a chairman and a vice chairman. After reviewing the charge to the committee, the number membership of subcommittees shall be determined by the committee within the framework of such charge.

III. Role of the State Board of Education

The State Board retains its present policy making function with responsibility for policy decisions affecting the educational needs of the State. In making such policy decisions it will be guided by information obtained from and specific recommendations made by SCOPE.

IV. Role of the Governor's Office

The Governor's Office lends its stature and prestige to the project by issuing the invitations to the persons nominated by the State Board to serve on SCOPE, by the continuance of the educational leadership role already established, by the request for frequent interim reports on progress from the State Board and by general strong interest and support in every way possible.

V. Responsibilities

The committee should begin its work as soon as possible so that if it has recommendations requiring legislative action, such recommendations could be made to the State Board of Education in time to provide for adequate study prior to the convening of the 1967 general legislative session.

In general terms, the task of the Committee is to advise the State Board of Education on the current condition and future development of education in California, with particular attention to those parts of it that require improvement.

SCOPE may make interim reports to the State Board of Education, with its final report to be made by June 30, 1967.

Included in that report shall be the establishment of a plan for a permanent system for the identification of the educational needs of the State and the establishment of priorities among those needs. (See Appendix B for expansion on identification of educational needs).

VI. Selection of Staff

1. The State Board of Education shall appoint the staff upon the recommendation of SCOPE. The staff shall be independent of the State Department of Education, but so related that the resources of the Department are available and adequate liaison provided.

2. SCOPE staff shall be under the direction and control of SCOPE.

3. SCOPE shall include, as a minimum. an executive secretary, a research specialist, and a technical writer to present information relating to findings, and supportive clerical staff.

4. SCOPE may employ ad hoc committees and may contract for services of individuals and agencies.

Attachment I (of the Charge to the Committee)

1. It will define, at least tentatively, what the goals of education should be for public elementary and secondary education. Taking into account that children differ in their needs, their interests, their aspirations, and their ability to learn, the Committee will define these goals in terms of what boys and girls should be and do as a consequence of having gone to school. In this connection the Committee will take due account of opinions and wishes of the citizens of the State in all walks of life. It will also secure, or cause to be secured, information on (a) the probable needs of the economy 10 and 20 years hence and (b) the problems of living and working that the generation now in school will be likely to face in meeting those needs. In carrying out this assignment the Committee will consult the best experts it can obtain in such fields as economics, sociology, demography, child development, the natural sciences, the arts, etc.

2. Insofar as possible, in the time at its disposal, the Committee will secure, or cause to be secured, information on how well the aforementioned goals are being attained by children in the several school districts of the State and will recommend procedures for a periodic audit of the effectiveness of educational programs in the State. In carrying out this assignment, the Committee will rely heavily on the services of the appropriate bureaus in the Department of Education and on experts in the universities and other appropriate agencies.

3. Insofar as possible, in the time at its disposal, the Committee will survey, or cause to be surveyed, the current and prospective educational resources in the State for children in the public elementary and secondary schools, taking account of (a) school plant and equipment and the financial capability of the several districts, (b) the supply of school personnel, (c) the ancillary community services on which the operation of schools, in part, depends (i.e., public utilities, traffic control, health services, recreation facilities), (d) the quality of housing, and (e) the density of the population.

4. The Committee will identify tentative targets to be reached in the next five, ten, fifteen, and twenty years. These targets will be expressed in terms of the measurable degree to which the goals should be met with due regard to the particular conditions under which each district must operate.

Attachment II (of the Charge to the Committee)

Long Range Educational Planning

Long range educational planning is defined as providing for the following steps:

1. the identification of emerging needs and problems;
2. the identification of opportunities for improving California's educational system;
3. the study and analysis of each of these problems in respect to:
    a. the number of students affected,
    b. the specific content or skill area of concern,
    c. the social relevance (the relative need for this skill or knowledge in terms of society),

d. the research of activities in the state and nation in terms of development appropriate to these problems and opportunities,

e. the preparation of a status report identifying the current readiness of education to respond to the identified needs and opportunities.

The process by which long range planning can most adequately be effected would involve the appointment of an advisory committee sensitive to the emerging problems and opportunities facing California education. The composition of this advisory committee should provide for representation from the following significant elements of California's population:

a. the colleges and universities which receive one portion of the student product,

b. the business and industry representatives who employ these products,

c. the Armed Forces who may be, or may not be, subsumed under (b),

d. the law enforcement agencies, including the Courts,

e. educational philosophers and sociologists sensitive to the needs of education to respond to our desire to improve the society in which we live,

f. scholars who can set forth ideals toward which the schools should strive.

The process of operation would essentially involve the following steps:

1. the listing of problems and opportunities;
2. researching each of these by ad hoc project teams and department staff;
3. the reporting of these data to an advisory committee;
4. discussion and analysis of these reports by the advisory committee;
5. the preparation of a report to the Board welcoming priorities for action;
6. the review of the report by the State Board of Education, the decision as to priorities, and the publication of the document as a report to the Governor and to the Legislature.

The staff of the department would be involved in this planning process at the following points in the following ways:

1. in providing status reports to the advisory committee on the problems and opportunities identified;
2. in participating in the discussion with the advisory committee, seeking to set priorities;
3. upon the establishment of priorities by the Board, to set priorities for their own operations in accordance with these priorities and wishes;
4. to participate in the development of new programs selected by the Board for action;

5. to participate in the evaluation of these and other programs to provide substantive information to the Board on the effectiveness of programs developed;
6. to inform districts regarding educational innovations; and
7. to assist, along with county offfices and supplemental service centers, in the implementation of such programs as may be selected by the local district.

(Note-- the abbreviation SCOPE was later shortened to SCPE to avoid confusion with other organizations.)

MEMBERS OF THE COMMITTEE

Frederick E. Balderston, Chairman

A. B. Cornell and a doctorate in economics from Princeton. He taught at various institutions before joining the Berkeley faculty of the University of California in 1957. His special interest has been the application of computer processes to management problems, and he has published widely in the field. Former consultant to the California Division of Savings and Loans and former State Commissioner of Savings and Loans. Chairman of UC's Center for Research in Management Science. Currently university vice president for business and finance. Home, Berkeley.

S. Clark Beise (Resigned, September 1, 1967)

Graduate of the University of Minnesota, which voted him its outstanding Achievement Award in 1955. Began his career in North Central area banks and came to California in 1933 as national bank examiner for the Twelfth Federal Reserve District. Joined Bank of America as a vice president in 1936. Served as president 10 years, is now chairman of its Executive Committee. Member of the Committee for Economic Development, served three terms as chairman of the San Francisco Bay Area Council and filled many other community positions. Named California Industrialist of the Year in 1963 in recognition of his development of electronic systems for the banking industry. Home, Hillsborough.

David Blackwell

He is a native of Illinois and won his A. B. in mathematics from the University of Illinois. He obtained his master's and doctoral degrees from Illinois also, and has been in college teaching since 1942, and at the University of California since 1954 as professor of statistics. He is a member of the National Academy of Sciences and former president of the Institute of Mathematical Statistics. Home, Berkeley.

Fred Castro

A native Californian, graduate of the University of California at Berkeley. His working career has been with H. C. Capwell Company of Oakland and he is now personnel superintendent. Served with a number of community organizations, particularly those dealing with work opportunities for minority groups. A director of the Family Service Bureau, director of the Small Business Development Center, and a member of the Urban League and the Mexican Unity Council of Oakland, among other positions. Home, Oakland.

Mrs. Jackson Chance

Holds the A. B. and L. L. B. degrees from the University of California, Berkeley. Former president of the Pasadena Chapter League of Women Voters, director of the

Family Service Association of America, member of the State Social Welfare Board. Staff, Ford Foundation, 1955-57. Later assistant to the dean of the Law School, Stanford University. Since 1959 executive director of the Rosenberg Foundation of San Francisco. Home, San Francisco.

Doris M. Dreyfuss (Resigned, September 1, 1967)

A New Yorker by birth, and the daughter of a onetime President of the Borough of Manhattan, New York City, Marcus M. Marks, she holds the A. B. degree from Vassar. Has been a director of the Family Service Association in Pasadena, and of Westridge School. Currently, member of the board of the Greater Los Angeles Zoo Association and of the Pasadena Humane Society. The Los Angeles Times named her Woman of the Year, 1963. Directs the business operations of her husband, Henry Dreyfuss, industrial designing, in Pasadena and New York offices. Home, South Pasadena.

Wesley I. Dumm (Resigned, December 1, 1967)

An Ohioan and a graduate of Ohio Wesleyan University, he served on the staff of the War Finance Corporation prior to entering the radio and television broadcasting industry on the West Coast. Has been sole or part owner of stations in San Francisco, Oakland, Seattle, and Pasadena, served on various national and international communications boards, and has been special consultant of the United States Information Agency. Member of the board of many organizations devoted to youth and community services, including the Pasadena Playhouse Association, Pasadena Art Museum, Pasadena Methodist Foundation, and the Kazanjian Foundation (scholarships for foreign students). Home, Pasadena.

Alvin I. Fine

Born in Portland, Ore., he is a graduate of Reed College and holds advanced degrees from Hebrew Union College of Cincinnati. Also holds an honorary doctorate from Santa Clara University. After World War II service as a chaplain in the China-Burma-India theater, joined the faculty of Hebrew Union College. From 1948 to 1964 was senior Rabbi, Congregation Emanu-El, San Francisco, and since then has been professor of humanities, San Francisco State College. Member of the San Francisco Human Rights Commission and a regular television panelist. Home, San Francisco.

John Green (Resigned, September 1, 1967)

A. B. in economics from Harvard University, but career has been as composer, conductor, arranger, and pianist in both light and serious fields. Popular songs include standards such as "Coquette," "Out of Nowhere," "Body and Soul." Works in extended forms performed by major orchestras of world. Recent composition includes score for "Who Has Seen the Wind," television film produced by the United Nations. Former associate conductor, Los Angeles Philharmonic Orchestra, regularly guest conductor with major orchestras. Governor-at-large of Performing Arts Council of Los Angeles Music Center, chairman of board of Young Musicians Foundation, president of Screen Composers Association of U. S. A. Holds four Oscars; currently music director for filming of "Oliver!" Home, Beverly Hills.

Ellis A. Jarvis

Native of Amador County, who after World War I service attended the University of California at Berkeley. Advanced degrees are from the University of Southern California and the California College of Medicine. With Los Angeles City Schools 37 years, successively as teacher, department head, supervisor, vice principal, principal, assistant superintendent and superintendent. Served on many committees dealing with educational problems at local, state, and national levels, and formerly lectured on school administration at the University of California at Los Angeles. Now president of the Los Angeles City Planning Commission. Home, Los Angeles.

George W. Johns

Native of Grass Valley, and a graduate of the public schools of San Francisco. While working as a cigar clerk, helped organize the cigar and liquor clerks union and became his local's first secretary. Became assistant secretary of the San Francisco Labor Council in 1948 and secretary-treasurer since 1950. Has been a member of the City Planning Commission, the Board of Education, and various state and area agencies dealing with vocational education, rehabilitation, civil rights, mental health problems. Delegate to the White House Conference on Problems of the Aging, and a member of the advisory board of San Francisco State College. Member of the Off-Campus Advisory Committee to the Institute of Industrial Relations, University of California at Berkeley. Home, San Rafael.

Mrs. Audrey A. Kaslow

A. B., University of California at Los Angeles, master's from University of Southern California. Los Angeles County Probation Department for 11 years, now supervising deputy probation officer. Special Representative for the California Fair Employment Practices Commission, private practice as psychiatric social worker. Fulbright lecturer and social work consultant in Colombia, U. S. delegate to Congress on Delinquency Prevention, Inter-American Children's Institute, Montevideo. Member of the executive board of the Council of Mexican-American Affairs, former member of the California Social Welfare Board, California State Consumer Counsel, Advisory Commission on Mental Health needs of the disadvantaged for the State Department of Mental Hygiene. Awards of the Equal Opportunities Foundation of Los Angeles and the League of Mexican-American Women. Home, Los Angeles.

Lucile Koshland

New Yorker by birth, graduate of Barnard College, Phi Beta Kappa. Has served as a member of the U. S. National Commission for UNESCO, director of the National Child Labor Committee, president of the League of Women Voters of New York State, co-founder and first president of the Carrie Chapman Catt Memorial Fund, president of the P. T. A. of Lincoln School of Teachers College, board member of the Urban League. At present trustee of the League of Women Voters' Overseas Education Fund, and a director of the International Hospitality Center of the San Francisco Bay Area. Home, Hillsborough.

Louis Lancaster

Attended Olivet College (his father was president), won three Michigan state intercollegiate tennis titles, and entered banking in Sarasota, Florida, where he served as a county supervisor and member of the Legislature. Came to California as a real estate loan officer, and embarked on a great succession of civic activities, which included organization of the Channel City Club and the presidency of the Affiliates of the University of California at Santa Barbara, a citizens group which worked to get a campus of the University in that city. Has chaired both the Santa Barbara Recreation Commission and the Park Commission. Helped organize the Santa Barbara National Bank in 1960, served as first president, and is now chairman of the executive committee. Home, Santa Barbara.

Malcolm A. Love

A Des Moines native, he attended Simpson College and received a doctorate from the University of Iowa. Began career in college administration as director of the junior college of the University of Toledo, and was a dean at Illinois Wesleyan and the University of Denver before becoming president of the University of Nevada. President of San Diego State College since 1952. During World War II was the executive officer in charge of naval training schools at Ohio State University and at Gulfport, Miss. Served in a variety of educational and civic organizations and was a member of the joint advisory committee in connection with the survey for the Master Plan of California Higher Education. Home, San Diego.

Don M. Muchmore

A. B. from Occidental College and graduate study in law and political science at the University of Southern California and University of California at Los Angeles. After experience in state college teaching and administration, became special assistant to the State Superintendent of Public Instruction Roy E. Simpson. Later director of the California Museum of Science and Industry, Los Angeles, chief deputy director of the California Department of Finance, and vice chancellor of the California State Colleges. Now chairman of the board and president of Opinion Research of California and The State Poll, Inc., and senior vice president, California Federal Savings and Loan Association. Home, Long Beach.

William H. Orrick, Jr.

Native of San Francisco and a graduate of Yale University. Law degree from the University of California at Berkeley. Served as Assistant U. S. Attorney General, civil division, in Department of Justice, Deputy Undersecretary of State for Administration, in the Department of State, and Assistant Attorney General, Antitrust Division. Presently practices as member of the San Francisco firm of Orrick, Dahlquist, Herrington & Sutcliffe. Home, San Francisco.

Rollin M. Russell, Vice Chairman

A. B. University of Wisconsin, and graduate study in physics and electronics at Wisconsin and Northwestern University. During World War II, in undersea warfare research at Columbia University, later assisted in development of proximity fuse and missile guidance systems at Johns Hopkins University. Served as executive engineer in special products development for the Bendix Corporation, vice president of Hughes Aircraft Company, president of Acoustica, president of the Raal Corporation. Now vice president of SoniCo, a Shell Oil subsidiary. Vice president of the Southern California Industry-Education Council and past member of the University of Southern California School of Engineering Advisory Board. Home, Tarzana.

Irving Stone

San Franciscan by birth, received A. B. from the University of California at Berkeley and did advanced study there and at the University of Southern California, where he earned his M. A. After teaching economics briefly at those institutions, turned to writing. His works dealing with notable characters of history have achieved great popular success, and have been translated around the world. Several were made into films. Among those with a California background are "Sailor on Horseback," a biography of Jack London, "Men to Match My Mountains," dealing with the opening of the Far West, and "Immortal Wife," the story of Jessie Benton and John Charles Fremont. Others are "Lust for Life," Vincent Van Gogh, and "The Agony and the Ecstacy," Michelangelo. Former president of California Writers Guild, president, Young Musicians Foundation, California chairman for National Library Week. Received the Christopher Award, the Silver Spur of the Western Writers of America, the Golden Lily of Florence, Italy, the Rupert Hughes Award, and the Gold Medal of the Commonwealth Club, San Francisco. He is a Knight Commander of Italy. Home, Beverly Hills.

Robert L. Winslow

Born in Butte, Montana, and attended Stanford University, obtaining an A. B. degree and law degree. After private practice of law for 10 years, became justice court judge in the Little Lake Judicial District and from 1961 to date has served as Judge of the Superior Court to Mendocino County. In that office he is also Judge of Juvenile Court, and he has vigorously advocated extension of the law's protection over the welfare and rehabilitation of juvenile offenders. Home, Ukiah.

Geraldine Pittman Woods

B. S. at Howard University, master's and doctorate in neuro-embryology at Radcliffe. Public affairs activities include service on the National Advisory Council of the General Medical Sciences Institute, member of the Defense Advisory Committee on Women in the Services, member of the executive boards of the YWCA, Community Relations Conference of Southern California, and the National Council of Negro Women. President of Delta Sigma Theta, national interracial public service sorority. Named "Woman of the Year" by Zeta Phi Beta sorority, and listed in Who's Who of American Women. In private life the wife of Dr. Robert Woods, and the mother of three children. Home, Los Angeles.

Original membership of the State Committee on Public Education included:

Robert J. Wert, provost, Stanford University, president-elect, Mills College. Resigned, July 11, 1966.

Clark Kerr, University of California. Resigned, Dec. 19, 1966.

His Excellency, the Most Reverend Hugh A. Donohoe, Bishop of Stockton. Resigned, December 2, 1966.

SCPE Staff

Preparation of Part Two of the SCPE report was supervised by Charles Scott Benson, Ph. D., Professor of Education, University of California, Berkeley. Professor Benson served as Executive Secretary from September 1, 1967, to April 1, 1968. Executive Secretary during the preparation of Part One was Ronald L. Hunt, Ed. D., Vice President, Brooks Foundation. Dr. Hunt served from July 1, 1966, to June 30, 1967.

Research Director throughout the Committee's life was David N. Evans, Ed. D. Dr. Evans has been appointed Director, Upper Midwest Regional Educational Laboratory, as of July 1, 1968.

Technical Writer for both Parts One and Two was Francis Hamilton, formerly an editor and writer for San Francisco newspapers.

Other professional assistance for Part Two was rendered by James W. Guthrie, Ph. D., and Irwin T. Johnson, Ed. D.

Jacqueline Caddel was the office staff for Part Two. For Part One the staff consisted of Linda J. Benas, S. Jean Paiva, Patricia E. Montemayor, Ann Ramos, and Linda Solis.

APPENDIX B

SOURCES USED BY THE

STATE COMMITTEE ON PUBLIC EDUCATION OF THE STATE OF CALIFORNIA

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APPENDIX B

SOURCES

These position papers were developed:

Dwight W. Allen, Associate Professor of Education, Stanford University, Kevin A. Ryan, Assistant Professor of Education, University of Chicago: A Perspective on the Education of Teachers in California in 1980.

John I. Goodlad, Director, Research and Development Division, Institute for Development of Educational Activities, University of California, Los Angeles: Instruction.

Paul R. Hanna, Lee T. Jacks, Professor of Elementary Education, Stanford University: Curriculum Innovations for the State's Quality Growth as We Approach 2000 A.D.

Werner Z. Hirsch, Director, Institute of Government and Public Affairs, University of California, Los Angeles: Teacher Supply and Demand in California.

Aaron B. Nadel, Edith J. Feniger, Lohnas H. Knapp, General Learning Corporation: The Future Requirements of Public Education in California.

Alan B. Wilson, Professor of Education, Arthur R. Jenson, Professor of Educational Psychology, and David L. Elliot, Assistant Professor of Education, University of California, Berkeley: Education of Disadvantaged Children in California.

Technical assistance was provided by the following, who prepared papers or appeared before the Committee, or aided in designing research projects:

Marvin Alkin, Associate Director, Research and Development Division, Institute for Development of Educational Activities, University of California, Los Angeles.

Laurence Belanger, Consultant in Program Planning, California State Department of Education.

James Benet, Education Writer, The San Francisco Chronicle.

Warren Carson, Director of Finance, Oregon State Department of Education.

Richard Clowes, Superintendent, Burbank Unified School District.

James H. Corson, Executive Secretary, California Association of School Administrators.

Richard deMille, Director of Publication, Brooks Foundation.

Lester A. Dunn, Research Assistant, Politics of Education Project, University of California, Berkeley.

Elliot W. Eisner, Associate Professor of Art and of Education, Stanford University.

Richard E. Farson, Director, Western Behavioral Sciences Institute, La Jolla.

Leon Fletcher, Coordinator of Instructional Services, Monterey Peninsula College.

Robert Gagne, Professor of Education, University of California, Berkeley.

David Goldberg, Research Division--Future Studies, U.S. Office of Education.

Thomas L. Goodman, Project Director, San Diego City Unified School District.

James Gregg, Chairman, Department of Political Science, Chico State College.

Harry Handler, Assistant Director, Southwest Regional Laboratory.

James Hunter, Professor of Education, San Diego State College.

Bess Hawes, Assistant Professor of Anthropology, California State College at San Fernando Valley.

George Gross, Associate Professor of English, San Diego State College.

H. Thomas James, Dean of the School of Education, Stanford University.

Donald Johnson, Coordinator of Program Planning, California State Department of Education.

John Keller, Director of Analytical Studies, University of California.

James A. Kelly, Assistant Professor, Teachers College, Columbia University.

Leon Lessinger, Superintendent, San Mateo Unified High School District.

Erick Lindman, Acting Dean, School of Education, University of California, Los Angeles.

Frederick MacDonald, Associate Professor, Psychology and Education, Stanford University.

Eugene McLoone, Associate in the Research and Development Center, Stanford University, School of Education.

George McMullen, Administrative Coordinator, Budget, Los Angeles City Unified School District.

Newton Metfessel, Professor of Education Psychology, University of Southern California.

Jack Price, Curriculum Coordinator, Mathematics--Science, San Diego County Department of Education.

Wilson Riles, Associate Superintendent of Public Instruction, Chief, Office of Compensatory Education, California State Department of Education.

Jack Schreder, Administrative Assistant, Carlmont High School, Sequoia Union High School District.

Jay Scribner, Assistant Professor of Education, University of California, Los Angeles.

William Stegeman, Assistant Superintendent, Curriculum Services, San Diego Unified School District.

J. Graham Sullivan, Deputy U.S. Commissioner of Education.

The following persons read position papers and prepared critical responses. Their reactions added greatly to the value of the papers and proved to be valuable additions to the Committee's knowledge:

Frances Adams, California Association for Supervision and Curriculum Development

Orville B. Aftreth, Assistant Superintendent, San Diego City Unified School District, Elementary Schools Division

Harold Allison, Principal, Sir Francis Drake High School, San Anselmo, Tamalpais Union High School District

Margaret Amoureaux, California Federation of Teachers Effective Schools Chairman

Edward J. Anderson, Superintendent; San Dieguito Union High School District

Helen S. Andres, President, California Association of School Personnel Administrators-Bay Section

Mrs. Barr, Director of Education, California Congress of Parents and Teachers

Howard Baumgarten, Arthur D. Little, Inc.

P.M. Beatts, Education Research, International Business Machines Corporation

E. Maxwell Benton, Education Specialist, California Taxpayers Association

Berkeley Unified School District, Staff

Ray Berry, Associate Superintendent, Riverside Unified School District

Hugh C. Black, Chairman, Department of Education, University of California at Davis

Dorothy S. Blackmore, University of California at Davis

Richard S. Boyd, Director, Instruction and Curriculum Development, Riverside Unified School District.

Donald N. Boyer, Director of Elementary Education, San Diego City Unified School District.

G.W. Brown, Chairman, Department of Teacher Education, California State College at Hayward

Kenneth R. Brown, California Teachers Association

Erven Brundage, Assistant Superintendent, Curricular Services, San Diego Office of County Superintendent of Schools

Frank Burke, Director, Title III, Tri-County Supplementary Educational Service Center, Santa Barbara

Dale C. Burkland, Curriculum and Guidance Director, Santa Clara Office of County Superintendent of Schools

Lewie Burnett, Head, Division of Education, California State College at Hayward

Mary L. Byrnes, Program Associate, Kern County Supplementary Educational Center, Bakersfield

Robert G. Campbell, Jr., Assistant Superintendent, Redlands Unified School District

John S. Carroll, Director of Education, California Labor Federation AFL-CIO

Edgar W. Case, Executive Secretary, Stockton Education Association

Bernard Chalip, Teacher, Alameda Unified School District

Edward W. Clements, President, California Educational Placement Association

W. H. Clinkenbeard, Director, PACE Project, ESEA Title III Planning Grant, Los Angeles

Richard M. Clowes, Superintendent, Burbank Unified School District

James Corson, Executive Secretary, California Association of School Administrators

Jack P. Crowther, Superintendent, Los Angeles Unified School District

James W. Cusick, Director, Secondary Education, California State College at Fullerton

Ralph C. Dailard, Superintendent, San Diego Unified School District

Nicholas J. Danny, Long Beach Unified School District

Martin DeRodeff, President, California Educational Data Processing Association

Marie Dickinson, Consultant, Los Angeles County Schools

Kenneth R. Doane, Dean, School of Education, California State College at Fullerton

Ray Edman, Project Coordinator, Educational Planning Center for Contra Costa County

Educational Resources Agency Staff; Sacramento County

Charleen Evans, California Teachers Association-Southern Section

Seymour Farber, American Jewish Congress

Charles R. Farrar, Associate Professor of Education, Stanislaus State College

Ray Farris, Director, Curriculum Planning-Secondary, Covina-Valley Unified School District

Robert Flewelling, Director, Educational Planning Center, Contra Costa County

Robert W. Formhals, Executive Secretary-Treasurer, California School Boards Association

Rev. James P. Gaffey, Diocese of Santa Rosa

George Genevro, Chairman, California Industrial Education Association

Margaret Gill, Head, Department of Teacher Education, Mills College

Laurel Glass, Board of Education, San Francisco Unified School District

Thomas L. Goodman, Director, Project to Revise Division 7, State of California Education Code

Garford G. Gordon, Chairman, California Advisory Council in Educational Research

Nathan A. Green, Assistant Principal, Portola Highlands School, Laguna Salada Union School District

Gladys L. Halverson, California Association for Childhood Education

William E. Hansen, Assistant Director, Elementary Curriculum, Santa Clara Office of County Superintendent of Schools

Willis W. Harman, Senior Systems Analyst, Stanford Research Institute

Barbara A. Hartsig, Professor of Education, California State College at Fullerton

L. W. Hedge, Executive Secretary, Accrediting Commission for Secondary Schools

H. Fred F. Heisner, Superintendent, Redlands Unified School District

John K. Hemphill, Far West Laboratory for Educational Research and Development

Frances Hine, Consultant Elementary Education, Art, County of Los Angeles

Jane R. Hodgdon, Teacher, Lee School, Long Beach Unified School District

Howardine Hoffman, Assistant Superintendent, Los Angeles Office of County Superintendent of Schools

Emma E. Holmes, Acting Director, Elementary Education, California State College at Fullerton

Paul D. Hood, Far West Laboratory for Education Research and Development

Robert Jenkins, Superintendent, San Francisco Unified School District (formerly Superintendent, Pasadena School District)

Robert Jett, North Coast Region PACE, Humboldt County

Hazel J. Jones, Immediate Past President, California Association of Teachers of English

Lloyd H. King, School of Education, University of the Pacific

Ernest G. Lake, Professor, School Administration, California State College at Fullerton

Wayne D. Lance, Director, Special Education, California State College at Fullerton

F. Melvyn Lawson, Superintendent, Sacramento City Unified School District

Hector Lee, Executive Vice President, California Folklore Society

E. L. Lewis, California School Boards Association

Dean Lobaugh, District Superintendent, Davis Joint Unified School District

Frederick E. Lucas, Superintendent, Laguna Salada Union School District

Alan S. Maremont, Kate Maremont Foundation, San Francisco

Jack N. Marsh, Professor of Education, California State College at Hayward

Mary C. McCarthy, Supervisor, Elementary Schools, San Francisco Unified School District

William N. McGowan, Executive Secretary, California Association of Secondary School Administrators

Bernard McKenna, Associate Dean, School of Education, San Francisco State College

Irving R. Melbo, Dean, School of Education, University of Southern California

Bruce Miller, Superintendent, Riverside Unified School District

Douglas L. Minnis, Head, Teacher Education, Department of Education, University of California-Davis

Robert D. Morgans, Associate Superintendent, Visalia Unified School District

Sidney G. Moses, Assistant Superintendent, Merced City Elementary School District

Miles Myers, Vice President, California Federation of Teachers

Robert A. Naslund, Chairman, Department of Elementary Education, University of Southern California

James Nelson, Project Coordinator, Educational Planning Center, Contra Costa County

Ward M. Nichols, Personnel Coordinator, San Francisco Unified School District

Glen Nimnicht, Far West Laboratory for Educational Research and Development

Arthur H. North, Assistant Superintendent, Azusa Unified School District

Oakland Unified School District Staff

Office of Compensatory Education, State Department of Education

E. G. Olsen, Director, Operation Fair Chance, Hayward Center

Sidney R. Ottman, Director, Health and Special Education, Santa Barbara County

Jon S. Peters, Chairman, Department of School Administration and Supervision, California State College at Hayward

Robert E. Phelps, Executive Secretary, California College and University Faculty Association

William Plosser, California Federation of Teachers

Harriett E. Porch, California Aerospace Education Association

N. Price, PACE Project, ESEA, Title III Planning Grant, Los Angeles

Jack Rand, Superintendent, Temple City Unified School District

David E. Rawnsley, San Mateo County PACE Program

Henry Reed, Director, Pupil Personnel Services, San Diego County

Jack D. Rees, Acting State Executive Secretary, California Teachers Association

Theodore L. Reller, Dean, School of Education, University of California-Berkeley

Harold B. Roberts, Head, Department of Educational Administration, Sacramento State College

Franklin P. Rolfe, President, Western College Association

Ann H. Rosenthal, Stanford Research Institute

Julian Roth, Associate, Academic Planning, The California State Colleges

Jack L. Rowe, California Association of School Administrators

Ryan, Edward V., Assistant Superintendent, Instruction, Rialto Unified School District

Warren Saltzman, President, Coordinating Council for Integrated Schools, San Francisco

San Diego County Education Department Staff

San Dieguito Union High Staff

Erwin H. Sasman, Director, Kern County Supplementary Educational Center, Bakersfield

James A. Saum, Head, Department of Pupil Personnel Services and Special Education, Sacramento State College

Norman B. Scharer, Superintendent, Santa Barbara School District

John Schippers, Associate Professor, School of Education, University of the Pacific

Carl M. Schmitthausler, Director, Elementary Instruction, Santa Barbara City Schools

Jay Scribner, Assistant Professor, School of Education, University of California-Los Angeles

Joe Severns, President, California Association for Supervision and Curriculum Development

William C. Shriner, Professor of Education, California State College at Hayward

Piroja Shroff, Chairman, Department of Teacher Education, California College of Arts and Crafts

Ray Slattery, Coordinator of Research and Development, Contra Costa County

Joe Smith, Chairman, Division of Education and Psychology, Chico State College

John Allan Smith, Head, Department of Education, Chapman College

Richard A. Smith, Acting President, Elementary School Science Association

Philip H. Sorensen, Manpower, Education, and Behavioral Research, Stanford Research Institute

Richard K. Sparks, Dean, School of Education, Fresno State College

Harold Spears, Superintendent, San Francisco Unified School District

Robert E. Stahl, Executive Secretary, San Bernardino Teachers Association

William H. Stegeman, Assistant Superintendent, San Diego City Unified School District

Nancy Stouffer, California Federation of Teachers

Donald F. Strahan, Chairman, Division of Education & Psychology, Humboldt State College

William Stryker, President, California Association of Teachers of English

Burton C. Tiffany, Superintendent, Chula Vista City Elementary School District

Iris Timson, Assistant Professor of Education, Los Angeles State College

Henry T. Tyler, Executive Secretary, California Junior College Association

Alden Vanderpool, Assistant Executive for Teacher Education, California Teachers Association

Lillian Watson, President, Classroom Teacher Department, North Coast Section CTA

Hal Weatherbe, Assistant Research Executive, California Teachers Association

William S. Weichert, Coordinator of Secondary Education, Oakland Unified School District

O. Meredith Wilson, President, National Advisory Council on the Education of Disadvantaged Children

Norman Wollitz, Director of Elementary Education, San Diego City Unified School District

The following members of faculties in the state's centers of higher learning participated in a series of interviews aimed at providing a forecast of the needs and expectations of education as viewed in the perspective of the various scholarly disciplines:

Paul B. August, Associate Professor of French, University of California, Berkeley

Hugh McKee Bell, Professor of Psychology, Chico State College

Harry Berger, Jr., Professor of Literature, University of California, Santa Cruz

Stanley A. Berger, Associate Professor of Mechanical Engineering, University of California, Berkeley

Arthur Bierman, Professor of Philosophy, San Francisco State College

Marion T. Bird, Professor of Mathematics, San Jose State College

Frances Bloland, Associate Professor of Physical Education, University of California, Berkeley

Gene Bluestein, Associate Professor of English, Fresno State College

Ralph C. Bohn, Professor of Industrial Arts, San Jose State College

F. Bohnenblust, Professor of Mathematics and Dean--Graduate Studies, California Institute of Technology

John R. Bolte, Associate Professor of Physics, San Diego State College

James F. Bonner, Professor of Biology, California Institute of Technology

Joseph Boskin, Professor of History, University of Southern California

Thomas M. Brigham, Chairman--Department of Social Work, Fresno State College

John A. Brooks, Assistant Professor of Biology, San Diego State College

Theodore Brunson, Assistant Professor of Music, San Diego State College

Otto Butz, Professor of Social Science--Inter-Disciplinary Studies, San Francisco State College

Mervin L. Cadwallader, Professor of Sociology and Humanities, San Jose State College

Edmund Carpenter, Professor of Anthropology, California State College, San Fernando Valley

Frank C. Child, Professor of Economics, University of California, Davis

J. Kent Clark, Professor of English, California Institute of Technology

John L. Clark, Professor of Drama, San Francisco State College

August Coppola, Assistant Professor of English, California State College, Long Beach

Alan Curtis, Associate Professor of Music, University of California, Berkeley

David C. Elliott, Professor of European History, California Institute of Technology

Charlotte D. Elmott, Dean of the College and Professor of Educational Psychology, Pitzer College

Erlandson, Erling H., Professor of Journalism, California State College, San Fernando Valley

T.C. Esselstyn, Professor of Sociology, San Jose State College

Seymour M. Farber, Dean of Educational Services and Director of Continuing Education, Health Sciences, University of California Medical Center, San Francisco

Jack E. Fink, Professor of English and Humanities, San Jose State College

Norman W. Freestone, Professor of Speech and Drama, Occidental College

Clayton Garrison, Professor of Drama, University of California, Irvine

Frederick O. Gearing, Associate Professor of Anthropology, University of California, Riverside

Horace N. Gilbert, Professor of Business Economics, California Institute of Technology

John R. Goss, Associate Professor of Agricultural Engineering, University of California, Davis

Jack I. Gourman, Lecturer in Political Science, California State College, San Fernando Valley

Jesse L. Greenstein, Professor of Astrophysics, California Institute of Technology

James E. Gregg, Chairman, Department of Political Science, Chico State College

George C. Gross, Associate Professor of English, San Diego State College

Jules Grossman, Professor of Psychology, San Francisco State College

Eugene Grundt, Assistant Professor of English, San Francisco State College

Harold A. Harper, Dean of the Graduate Division, University of California School of Medicine, San Francisco

Bess Hawes, Assistant Professor of Anthropology, California State College, San Fernando Valley

George K. Helmkamp, Professor of Chemistry, University of California, Riverside

Milton Hildebrand, Professor of Zoology, University of California, Davis

Ernest Hilgard, Professor of Psychology, Stanford University

William R. Hitchcock, Professor of History, University of California, Santa Cruz

John J. Holland, Professor of Molecular Biology, University of California, Irvine

Shirley Hopps, Assistant Professor of Art, University of California, Riverside

Richard A. Kalish, Professor of Psychology, California State College, Los Angeles

Donald Kennedy, Professor and Executive Head, Department of Biology, Stanford University

James Kerans, Associate Professor and Head of Theater Arts Division, University of California, Los Angeles

Edwin J. Knapton, Supervisor of Subject "A", University of California, Berkeley

Shoshichi Kobayashi, Professor of Mathematics, University of California, Berkeley

Joseph Krause, Assistant Professor of Fine Arts, California State College, Long Beach

Joshua Lederberg, Department of Genetics, Stanford University

Frederick C. Lindvall, Chairman--Division of Engineering and Applied Sciences, California Institute of Technology

Gilbert D. McCann, Professor of Applied Sciences, California Institute of Technology

James McGaugh, Professor of Psychobiology, University of California, Irvine

Henry McGuckin, Jr., Assistant Professor of Speech, San Francisco State College

Horace W. Magoun, Dean--Graduate Division, University of California, Los Angeles

James March, Professor of Psychology and Sociology, University of California, Irvine

Richard C. Maxwell, Dean of the Law School, University of California, Los Angeles

Sherman M. Mellinkoff, Dean--School of Medicine, University of California, Los Angeles

W.E. Meyerhof, Professor of Physics, Stanford University

Lee Wallace Miller, Professor of Biological Sciences, Chico State College

Stanley Mills, Associate Professor of Biology, University of California, San Diego

Edwin S. Munger, Professor of Geography, California Institute of Technology

Charles Nash, Associate Professor of Chemistry, University of California, Davis

Arnold E. Newman, Assistant Professor of English, Chico State College

Barbara Nordquist, Assistant Professor of Home Economics, San Diego State College

Richard H. O'Connell, Assistant Professor of Psychology, San Fernando Valley State College

Lew D. Oliver, Professor of History, Chico State College

Robert W. Oliver, Associate Professor of Economics, California Institute of Technology

Robert B. Palmer, Professor of Classical Languages, Scripps College

E. P. Panagopoulos, Professor of History, San Jose State College

Allen Parducci, Assistant Professor of Psychology, University of California, Los Angeles

Roderic Park, Professor of Botany, University of California, Berkeley

Douglass S. Parker, Professor of Classical Civilization, University of California, Riverside

Ann Paterson, Chairman of Women's Physical Education Deparment, San Francisco State College

Virginia Ringer, Assistant Professor of Philosophy, California State College, Long Beach

Charles Roberts, Chairman of Physics and Astronomy, California State College, Long Beach

Burton Rodin, Professor of Mathematics, University of California, San Diego

Octavio I. Romano, Assistant Professor of Public Health, University of California, Berkeley

Richard H. Rosenblatt, Assistant Professor of Marine Biology, University of California, San Diego

Paul Saltman, Professor of Biochemistry, University of Southern California

Nevitt Sanford, Institute for Study of Human Problems, Stanford University

John D. Schopp, Professor of Astronomy, San Diego State College

Herbert Schulman, Professor of Biology, University of California, San Diego

Sheldon Schultz, Assistant Professor of Physics, University of California, San Diego

Ernest E. Sechler, Professor of Aeronautics, California Institute of Technology

Irwin W. Sherman, Assistant Professor of Zoology, University of California, Riverside

Stuart M. Smith, Assistant Professor in Submarine Biology, University of California, San Diego

Herbert Snyder, Professor of Agricultural Economics, University of California, Davis

Reidar F. Sognnaes, Professor of Oral Biology and Anatomy, University of California, Los Angeles

Clarence E. Stephonson, Assistant Professor of Speech, Art--Drama, San Diego State College

Allen Stussy, Professor of Art, University of California, Los Angeles

Wilfred Sutton, Professor of Health Sciences, California State College, San Fernando Valley

George L. Tabor, Assistant Clinical Professor, School of Medicine, University of California, San Diego

Frances C. Tanikawa, Acting Assistant Professor of History, University of California, San Diego

Edward Thorp, Associate Professor of Mathematics, University of California, Irvine

Robert A. Thornton, Dean of the School of Natural Sciences, San Francisco State College

James Vlamis, Professor of Soils and Plant Nutrition, University of California, Berkeley

Helen Jane Wamboldt, Lecturer in Speech, California State College, San Fernando Valley

Bernice M. Wenzel, Associate Professor of Sociology, University of California, Los Angeles

George Wickes, Professor of English, Harvey Mudd College

Robert L. Wild, Professor of Physics, University of California, Riverside

William E. Wilgus, Coordinator of Men's Physical Education Department, California State College, Los Angeles

F.M. Glenn Willson, Professor of Government, University of California, Santa Cruz

James H. Winter, Professor of Music, Fresno State College

Laurence Wise, Assistant Dean for Students, Stanford University School of Engineering

Carole Wolff, Assistant Professor of Sociology, Sacramento State College

Gurdon G. Woods, Sculptor in Residence, University of California, Santa Cruz

Leo Young, Professor of Journalism and English, San Francisco State College

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APPENDIX C

KEEPING TEACHERS IN THE CLASSROOM

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APPENDIX C

Keeping Teachers in the Classroom

Good teachers should not have to become administrators to rise to the top of their profession. Their excellence as teachers should be enough justification to keep them in classrooms. Various ways to reward them with extra pay and increased stature are worthy of consideration by local school districts. The following examples of graduated pay scales which do not match pay to longevity were submitted to SCPE.

A Differentiated Staff in the Preparation of Teachers

(Prepared by SCPE conference team of Jan. 25--Feb. 1, 1967)

Level One--Pre-Professional

Teacher Aids

Work 10 hours a week in clerical or non-teaching supervisory duties for minimum pay. Required third-year college standing, recommendation of their teacher training institution, in which they continue their studies.

Teacher Assistant

Grading papers, tutoring, leading small group discussions. Senior standing, plus college approval. 10 hours weekly, at increased pay over aids.

Cadet Teacher

Teach one year under supervision of master teacher or as member of teaching team. A. B. plus enrollment in graduate study. 10 hours weekly, at stepped up pay rate.

To this point, students could be screened out of

program, or could withdraw without penalty.

Technical Assistant

This program for readers, typists, artists, audio-visual aides, etc. would be outside the teacher training program and involve no professional duties with students. Pay, hours, prerequisites, current study program set by district. It could serve as a way to involve parents.

Level Two--Professional

Teacher

Responsibility for teaching, alone or in team, assisted by teacher aides and assistants, with additional responsibility of supervising them. Require 5 years of training, plus credential. Additional in-service training as set by district, graduate study according to individual goal. District salary schedule starts.

Master Teacher

Head teaching team, supervise new teachers, cadets, or varying special assignments in addition to teaching. MA plus credential, plus recognized superiority in teaching. In-service training emphasizes leadership. Plans own refresher courses. Salary scale plus 10 pct.

Specialist Teacher

Teach one or more classes, plus assignment as dept. head, curriculum specialist, consultant, or demonstration teacher. Master teacher rating plus special talents in necessary areas. In-service leadership training, self-planned refresher courses. Salary scale plus 20 pct.

Differentiated Teaching Staff In the San Diego City Schools

(Statement prepared for SCPE by the Administrative staff,
San Diego Unified School District)

The concept of differentiated levels of responsibility for teachers has been under development for 15 years in San Diego. Plans are emerging which eventually will provide leadership assignments for most outstanding teachers at least half their professional careers. These various levels are identified as follows:

Regular Teacher

Criteria of training and experience are being developed for initial employment of regular teachers. Criteria are established for each instruction area. These are used in recruiting and screening for employment. Thus quality elements are built into the initial employment of regular teachers.

Demonstration Teacher

Classroom teachers judged outstanding by their performance in the classroom are selected to demonstrate teaching to new teachers.

Resource Teacher

Several different leadership assignments are provided for classroom teachers judged outstanding in classroom work and in demonstration programs. These may be called by several different titles, according to details of assignment.

District resource teachers are released from classroom duty to work with other teachers throughout the district to improve instruction. These assignments are for specified periods, usually one to three years.

In-school resource teachers are selected by principals to provide instructional leadership within the school, either grade level, subject area, or for specific instructional projects. Usually they remain in the classroom, are released by substitutes when needed, but provide leadership as an added responsibility. These assignments vary, year to year.

Auxiliary teachers are outstanding classroom teachers released from regular class, but frequently serving as substitutes to release other teachers for instructional improvement work and also to provide leadership similar to that of an in-school resource teacher.

Teachers on special assignment (TSA) are released from classroom duty to assist the principal in instructional planning, and development of materials.

Other leadership positions are in the process of development, such as intern supervisor, cadet coordinator.

All are intended to offer responsibility to outstanding teachers. Each assignment is for a specified period.

Instructional Consultant

A variety of permanent positions are provided. These promote outstanding teachers to leadership positions with district-wide responsibility for instructional improvement.

Instructional consultants have broader responsibility than the resource teacher positions.

In effect, these may be considered at the same level of responsibility as the previously designated supervisor and assistant supervisor. The latter positions have been abandoned and the instructional consultant position established. These instructional consultant positions have no line responsibility, but the positions are filled by expert teachers assigned to assist other teachers in a wide variety of instructional improvement activities.

Salary Differentials

Salaries have not been mentioned in order to emphasize the gradual development of diversified leadership positions for teachers. The regular teacher is paid on the basis of a regular training and experience schedule. This schedule forms the salary base on which all other positions are related.

The demonstration teacher is paid on the regular teacher salary schedule, plus $25 for each demonstration. The resource teacher positions are paid a token differential (teacher salary plus $200 annually). Because of the temporary nature of these positions, the pay differentials have been kept small to avoid morale problems. When sufficient positions become available to make extensive use of outstanding teachers, this differential may be increased and teachers rotated from one position to another at this level of leadership.

The instructional consultant positions are paid on the Unified Salary Schedule--a separate schedule from the regular teacher schedule. The unified schedule is a responsibility schedule. Instructional consultants are permanent positions and are paid a substantial salary differential.

The differentiated teaching staff has become a reality. Positions of varying responsibility have been developed with staff support. These are professional leader positions with increasing degrees of responsibility. The emphasis in all positions is instructional improvement--a professional goal.

DIFFERENTIATED STAFF

Temple City, California

Title	Typical Preparation	Typical Compensation	Job
Curriculum Associate (Contract)	Doctorate	$14 - 18,000	Anticipator: Shapes curriculum. Gives direction to what curriculum should be in the future and how subjects should be related to each other
Senior Teacher (Contract)	M. A.	$11 - 14,000 (12 months)	Conceptualizer: Makes explicit the concepts and goals in each course or grade level.
Staff Teacher (Tenure)	B. A. + 1	$7500 - 9000 (10 months)	Illustrator: Translates units and goals into highly teachable lesson plans.
Associate Teacher (Tenure)	B. A.	$5800 - 7500 (10 months)	Doer: Carries out the given plans.

Promotion is not a function of length of service; one could remain on associate teacher level throughout career. Tenure is given only in lower categories; although the top two levels are under contract, their holders could retain tenure at the lower levels, and therefore no change in present tenure laws is required. In addition to the levels described, additional clerical and supervisory aids and teacher aids would be included, on full or part-time basis, to conduct non-teaching work.

APPENDIX D

MANPOWER GUIDELINES FOR EDUCATIONAL POLICY PLANNING IN THE STATE OF CALIFORNIA

Consultant's Report Prepared

For the State Committee on Public Education

by

Nicholas DeWitt
Professor of Economics and Government
Indiana University

Berkeley, California

February, 1968

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APPENDIX D

MANPOWER GUIDELINES FOR EDUCATIONAL POLICY PLANNING IN THE STATE OF CALIFORNIA

by

Nicholas DeWitt

Summary Findings and Recommendations

This study is intended to provide some guidelines for educational policy based on the analysis of current and projected manpower development in the State of California. The major findings and recommendations are:

Finding I. The State of California and its agencies do not conduct systematic studies of manpower requirements as related to education. An inter-agency board for human resources development composed of representative departments ought to be established to deal with long-range manpower development problems (research on manpower development policy in relation to all levels of education) on a systematic and coordinated basis. The present California Manpower Coordinating Committee does not fulfill such a function. Such activities should be funded through appropriations for research and planning to specific agencies, as well as to the coordinating board itself, which would be the major statutory agency recommending to the executive and legislative branches of the State long-range policies for manpower development and education.

Finding II. The data examined below indicate that the real bottleneck in the development of universal public education in the State of California is the high dropout rate in grades 10-11 and 11-12. Some 20 per cent of the pertinent age group do not complete 12 years of schooling in California and thus enter the labor market without any significant preparation for work-oriented activity or employment in an occupation. Of those who do graduate from the 12th grade, at least 35 per cent do not continue on to any system of higher education (including junior colleges). Solutions must be sought for the following:

1. The effectiveness of upper secondary education must be improved.
2. Improved remedial and continuing education with emphasis on job skills should be conducted not under the auspices of the public secondary schools but under the auspices of the junior colleges, combining work-oriented (vocational) education and remedial general education equivalent to grades 10-12.
3. In view of the fact that 55 per cent of California youth do not continue on to higher education of any kind, the secondary schools (with increased and improved guidance and counseling) should singly or in combination with junior colleges offer more work-oriented or occupational education.
4. Such work-oriented or occupational education (note: the present types of so-called "vocational education" courses must be completely overhauled and fitted into new program requirements identified by occupational clusters) should be offered to all secondary school students, even though they purport to be enrolled in college preparatory programs, either through new centers or in collaboration with junior college programs.

Finding III. In the past the State of California has been dependent to a large extent upon the immigration of high-level manpower (with 12 or more years of education) from other states. Such dependence will be diminishing somewhat in the next two decades, but will not be totally eliminated in the foreseeable future. In its public education, however, the State should adopt a policy of "self-sufficiency" which reinforces the suggestions in Finding II above. The occupational shifts in the next decades will be such that the greatest demand will be in white-collar and service occupations. This must be reflected in the guidance and counseling in secondary schools, with the assumption that in the next two or three decades the upcoming age groups will be composed of:

50 per cent high-school graduates (or less than completion of 12 grades)

25 per cent with partial higher education

25 per cent with completed higher and post-higher education.

Strictly speaking, the college preparatory programs should concern only about one-half of secondary school students, who nevertheless should be exposed to some occupation-oriented school training. The other half must receive more extensive work-oriented or occupation-oriented education in the high schools. In view of the anticipated inter-occupational shifts, such work-oriented education should be of a general rather than narrow specific job-oriented type. Broad occupational preparation profiles and training requirements must be developed in a cooperative effort between secondary schools, junior colleges and employers.

Finding IV. Statistics on vocational education and data on manpower retraining are inadequate to judge the extent of work-oriented or employment-oriented training in California schools. In 1965-66 some 225,000 students in secondary schools and 156,000 in junior colleges took at least one vocational course. How many students took more than one such course is difficult to judge. Manpower retraining (most of it under federal programs) was offered to some 52,000 persons. It appears that in the aggregate, less than one-fourth of all secondary students took at least one vocational course, and if the same student took more than one course, the proportion would be much smaller. The entire program of work-oriented education in the secondary schools of the state must be re-examined. The State of California needs new emphasis on vocational and technical education in public schools and outside them. The State cannot afford the competition, proliferation and duplication of effort. The main problem is how to develop close cooperation between the State Department of Education and other outlets currently involved in manpower training and retraining activities.

Finding V. Manpower planners examine and forecast certain employment demand and occupational trends but usually shy away from associating these with specific educational and training requirements. Educationalists are invariably willing to examine the effectiveness of teaching-learning processes, but seldom if ever are willing to consider and be constrained by the requirements of the occupational end-use of their products. The problem, then, both for the United States nationally and for the State of California, is how to improve and/or develop a system or a set of sub-systems which would facilitate the synchronization of occupational requirements and occupational education-training objectives. Occupational guidance, as well as occupational preparation, should be most radically revised and improved in the light of employment requirements. California should develop a state-wide computer system utility which would permit more effective synchronization of occupational guidance (education-training) with actual employment opportunities. This system should be administered by an independent board (such as is recommended in Finding I above), but its services should be made available to all school districts either through a Department of Education subsidy or on a subscription basis.

Finding VI. Without a thorough study of motivational patterns for the state, such as relationships of income-educational attainment, income-educational aspirations, income-school completion (and further post-secondary education)--all controlled for occupation of parents, urban-rural patterns and inner-city-suburban breakdowns--the analysis of the effectiveness of ADA expenditures by county or district, related to transitional coefficients (school success) or other achievement variables, makes little sense. The data by county aggregated by regions, in relation to transitional coefficients (grades 10-11 and 11-12) and continuation into post-secondary education, display significant variation for the state. If it is assumed that the quality of education, as judged by success rates (and further post-secondary education), is a variable of expenditures per pupil, it varies significantly throughout the state. The enormous variation of expenditures for occupation-oriented education by county and school district is clearly evident from financial reporting of the state. Studies must be made to determine what formulas for distributing state financial aid are to be made to equalize the success and achievements rate and particularly to develop an equitable base for occupation-oriented education. However, it is emphatically clear that the present formulas of redistribution of state aid funds in order to provide for equitable educational opportunities (measured by the success rates of students and/or achievement) and for occupation-oriented education simply make no sense.

General Considerations

Under the conditions of political uncertainty and accelerated technological and social change which are taking place in America today, the business of economic and social forecasting is one of the most difficult undertakings. It is doubly difficult to translate economic or "social goal" forecasts into employment and occupational requirements of the future. It is then triply difficult to interpret these manpower projections in terms of the associated educational and training prerequisites.

This paper deals with aggregate indicators of these future trends. Some planning decisions are basically simple: aspirin will usually cure a headache, though not all headaches at all times. Others are very complex: spending more money on education will usually produce in a formal sense more educated men, though not all better educated under the same circumstances--and not all better equipped to perform their functional roles in society. The acceptance of planning depends upon the degree of complexity and certainty of the projections on which the decisions are based. Some decisions do not involve knowledge about how the entire system works; others need the conception of the operation of the whole process. The effectiveness of the planning process depends upon the degree of certainty in projecting the future influences of a few key and relatively well understood elements. It is the proper knowledge of these major elements which establishes the functional framework for planning, and the planning process as a tool for policy decisions becomes difficult to manage if it is cluttered by cumbersome detailed information.

Unlike most manpower studies of a similar type,[1] based on a collective effort, extensive computerized data-processing and cooperative arrangements with a multiplicity of state agencies, the present report constitutes an individual effort. As such, it derives its shortcomings not only from the paucity of data generated by state agencies, but also from the lack of funds to develop a much more detailed and refined "in depth" study of occupational requirements. As noted in the author's earlier report to the Joint (Legislative) Committee on Higher Education,[2] the State of California is especially in need of such manpower studies, for it is unique among other states in its pattern of net migration and dependence of employment upon federal (defense-aerospace) procurement policies.

Planning decisions, especially those taken by public bodies and government, must necessarily involve conception about the operation and functioning of education in relationship to specific activities and goals of the society it serves. It is the interaction of aims and social forces outside education that makes educational planning the most complex of all societal institutions. "Education for what" represents a major dilemma, and depending upon judgment and values, only certain aspects of educational planning are usually selected for emphasis. There are many shades of judgment about the relevance of education to the development of society, but basically the attitudes towards educational planning may be grouped into three categories:

1. Assuming that education is a human right and an individual good in itself, the main concern of educational planning should be the "quantity of output"--provision of maximum opportunities and unlimited choices for individuals regardless of how and why they seek or use such education.

2. Assuming that education is a tool for developing leadership talent of society, the main aim of educational planning should be the "quality of output"--selection of individuals according to some prescribed standards and education to the maximum capacity of only those who can benefit from it.

3. Assuming that education is a means for the development of differential and specialized human inputs into the productive processes of society, the main task of educational planning is to establish criteria for "quantity and quality outputs" in accordance with social needs for the "division of labor" and "productive employment."

In the past few years various inquiries into state policies and legislation by different committees and commissions have developed the viewpoint that one of the greatest assets of California lies in the richness of its human resources. In view of this, it is peculiar to note that neither spokesmen for the Great Society in the past nor advocates of the Creative Society now have addressed themselves to the development of long-run policies to enhance the manpower potential of the state. A review of the reporting and data-gathering activities of the State Departments of Industrial Relations, Employment, Education, etc., reveals that their main preoccupation is with current information and no forward projections and planning are undertaken, with the notable exception of demographic projections by the Department of Finance.

One of the universal concepts of development is the division of labor, which refers to the fact that the labor performed in a society is diversified and specialized, and that the process of development calls for greater diversification of the skills of labor and more complex interdependence in the utilization of manpower. It is in this area that exercises (research and policy planning) in the State of California fall far short of their potential. In order to conduct such exercises, occupational-educational requirements must be studied on a continuing basis, an activity neglected by the state agencies.

One of the major objectives of my assignment was to prepare estimates on manpower needs of the California economy and to define the effectiveness of the public schools in meeting these needs. The major difficulty in carrying out this exercise rests not only with the lack of readily available data generated by state agencies which are supposed to deal with past, present and "future" statistical information, but with the very hazards of projecting trends under conditions of accelerated change which are taking place currently in employment and occupational requirements and the associated educational and training prerequisites. Undoubtedly, economic conditions will affect employment. Nevertheless, under certain assumptions it is more preferable to devise certain broad guidelines for the future designed to clarify major goals and aggregate targets rather than extrapolate exact magnitudes of the future population and employment and associated occupational and educational requirements.

Manpower and Education

As a nation, we are probably more concerned at present with the relationship between our educational system and employment than ever before. This concern has been expressed on many occasions,[3] and was most recently dramatized in two of President Johnson's Messages to Congress.[4] In order to introduce the subject, yet avoiding the construction of a complicated model, Chart I has been prepared. It gives a schematic representation of the relationships between education, population and labor force. Complex arguments and the methodologies of manpower projections aside, it is sufficient to state that the educational system has its "natural" inputs, both in-state born and in-migrant population, and its outputs. Two kinds of outputs are produced:

1. Graduates and school leavers who complete their program of education.
2. Persons who, for lack of a better word, are called "dropouts"--persons who do not complete the program of education which they began.

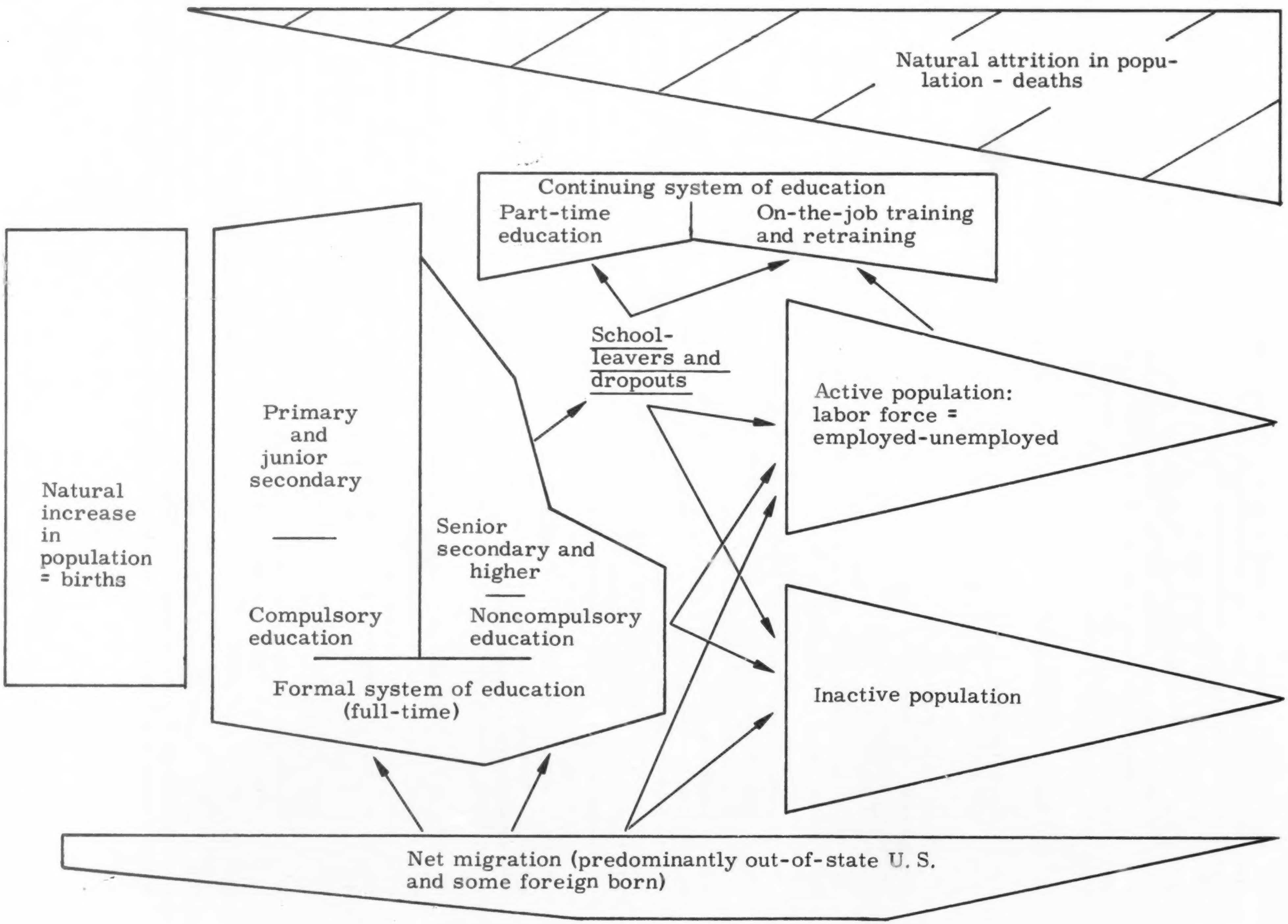
These two products of the educational system are then either absorbed in the active population and labor force or else become part of the inactive population. Both graduates and school leavers who entered the active labor force or who became part of the inactive population may at some time enroll in programs of continuing education which are administered either as an adjunct of the formal school system (namely, part-time education) or may be trained or retrained through informal on-the-job programs.

The essence of the manpower approach to educational planning consists in reviewing occupational composition by level of educational attainment of the active population and then stating that certain levels of educational preparation are "required" or desired. U. S. social policies and the U. S. educational system are such as to make the prediction of educational requirements based on manpower needs more difficult and less accurate than is the case in other social systems. No manpower planning techniques attempted so far have achieved predictions of sufficient accuracy in the long run to serve as precise guides for educational policy. Conversely, no educational development efforts attempted so far have achieved the functional training objectives of preparing human beings for specific work-oriented roles in society. Given these truisms and, particularly, considering the realities of the U. S. social and political setting, which reflect flexibility and pluralism, all that can be hoped to be accomplished by the manpower approach to educational planning is to identify correctly and approximately the trends and the direction of the effort needed.

National trends appear to be as follows.[5] The United States has already achieved nearly universal education up to age 15. The social policy is to push this up. At the present time, approximately 65 per cent of the population aged 15-24 enter the labor force as "school leavers" with education of from 9 to 14 years. Even if in the next two decades this proportion is reduced to some 45 per cent of the age group 15-24, the problem of the kind of work-oriented formal or informal training or retraining programs for employment will still remain. However, since the absolute number of persons in this age group is to increase from 27,000,000 in 1960 to 45,000,000 in 1975 and 55,000,000 by 1990 the problem of work-oriented training or retraining will become more complex. If we assume that through encouragement and expansion of opportunities, 55 per cent of the age group 15-24 will remain in school in the 1970's and 1980's, the response to their educational choices will be made primarily by institutions of higher education. This leaves at least 45 per cent of the age group who would require some sort of work-oriented education of less-than-college level type.

CHART I

SCHEMATIC REPRESENTATION OF EDUCATION IN ITS RELATIONSHIP TO POPULATION AND LABOR FORCE


Natural attrition in population - deaths
Continuing system of education
Part-time education
On-the-job training and retraining
School-leavers and dropouts
Active population: labor force = employed-unemployed
Inactive population
Natural increase in population = births
Primary and junior secondary
Compulsory education
Senior secondary and higher
Noncompulsory education
Formal system of education (full-time)
Net migration (predominantly out-of-state U. S. and some foreign born)

In-Migration and California Schools

The State of California was and will remain among the top ten states in the nation affected by high rates of in-migration. The complexity of the California situation as a high net-migration state is reflected in the educational system. The entire system of formal education, as well as entry into the active labor force or inactive population, is influenced by the presence of an enormous number of net migrants. While the problem itself is widely known, the magnitude of its impact upon schools is seldom realized. According to the 1960 Census of Population, 52 per cent of the 14,400,000 California residents were born outside the State of California.[6]

In relation to the problem of public education policy, however, the following estimates should be considered:

California state births, 1949	245,000	
Natural losses, 1949-65	17,000	
Native age group of 17-year-olds, 1966	227,000	
Actual age group of 17-year-olds, 1966	320,000	
Net migration gain	93,000	
In per cent of the age group of 17-year-olds, 1966		29 per cent

There is some variation in absolute numbers for neighboring years. However, the following general statement is correct: California schools in the 1950's and 1960's were educating somewhere between one-quarter and one-third of school-age children born outside the State of California.

There is wide disagreement in Sacramento, as well as among different researchers, as to what extent the net migration pattern which prevailed in the 20 post-World War II years will continue. Some feel that the present level of net migration, which accounts for an influx of some 325,000 to 350,000 persons annually (of whom some 25 per cent are youths in the school-age bracket), may decline to about 250,000 per annum in the 1970's. This may or may not happen. But even if it holds true for the 1970's and 1980's, the policy issue concerning public education will remain. The educational system must absorb out-of-state migrants and provide retraining for out-of-state migrant youth. The in-migrants will certainly constitute more than 15 per cent of the respective school age group. The problem of such absorption is not studied seriously. Therefore, the Department of Education, together with other agencies, should monitor on a continuing basis the measures for educating this youth.

Quantitative Indices of Performance of California Schools

The aforementioned issue of the influx of migrants into the school system complicates enormously any and all calculations concerning the success rates of students in California public schools. Table 1 presents calculations of transition ratios for the graded public school enrollment in the State for the period 1947-67.[7] On the basis of these data in Table 1, Table 2 presents the 10-year trend in transition coefficients for the California public school system. To be noted particularly are the transition ratios between Grades 6 and 7 and between Grades 8 and 9, where, because of the extremely high influx of migrants and/or because of the "dumping effects" of parochial schools, there are 3 1/2 per cent increases in the number of pupils in the next higher grade as compared with the previous one a year earlier.

Table 1

GRADE TRANSITION (OR PROGRESSION-SURVIVAL) RATIOS FOR THE GRADED PUBLIC SCHOOL ENROLLMENT OF THE STATE OF CALIFORNIA, 1947-1967

	Entry Classes in Grade 1 in the Fall of the Year Below									
Thous.	155.3	161.7	180.9	185.7	185.3	188.3	223.9	221.7	243.3	254.0
Transition between grades	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
1-2	0.893	0.903	0.910	0.918	0.949	0.951	0.960	0.982	0.988	0.993
2-3	0.981	0.977	0.985	1.011	1.007	1.009	0.999	1.023	1.017	1.010
3-4	0.981	0.986	1.006	1.011	1.012	0.999	1.006	1.023	1.011	0.997
4-5	0.952	1.015	1.016	1.017	1.004	1.014	1.018	1.019	1.007	1.017
5-6	1.019	1.020	1.015	1.006	1.015	1.019	1.013	1.009	1.016	1.013
6-7	1.036	1.039	1.029	1.035	1.041	1.036	1.024	1.042	1.035	1.031
7-8	1.016	1.007	1.018	1.021	1.015	1.007	1.015	1.014	1.012	1.012
8-9	1.026	1.030	1.032	1.034	1.027	1.036	1.035	1.038	1.040	1.043
9-10	0.993	0.996	1.002	0.995	1.003	1.004	1.001	1.007	1.005	1.006
10-11	0.901	0.920	0.926	0.928	0.927	0.933	0.945	0.947	0.947	0.954
11-12	0.882	0.876	0.886	0.886	0.897	0.907	0.918	0.918	0.927	0.916
12-grad.	1.001	0.989	0.997	1.006	1.009	1.009	1.004	1.009	0.999	(NA)
	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
	Graduates from Grade 12 in the Spring of the Year Above									
Thous.	114.1	124.6	148.9	160.5	167.1	172.7	208.7	227.6	242.7	(NA)

NA-- Not officially available. 1967 graduates were approximately 250,000-252,000.

SOURCE: Enrollment by grade from the reports of California State Department of Education, Bureau of Educational Research. Published reports for 1963, 1964, 1965 and 1966. Mimeographed tabulations (courtesy of Dr. H. W. Magnuson) for earlier years. Transitional coefficients recomputed on the basis of unpublished tabulations (courtesy of Mr. J. Freitas) prepared by the California Department of Finance, Financial and Population Research Section.

Table 2

AVERAGE TRANSITION COEFFICIENT BETWEEN GRADES IN THE PUBLIC SCHOOLS OF CALIFORNIA

(based on 10-year trend [1946-55 for entering classes and 1958-67 for graduates])

Grade	Transition Coefficient
1-2	.945
2-3	1.011
3-4	1.003
4-5	1.008
5-6	1.014
6-7	1.035
7-8	1.014
8-9	1.034
9-10	1.001
10-11	.933
11-12	.901
12-grad.	1.002

SOURCE: The state-wide averages are based on 10-year mean transition coefficients presented in Table 1 above.

The second observation concerning Table 1 and its summary in Table 2 is the significant falling off of the transition ratios between Grades 10 and 11 and 11 and 12. Based on the transitional coefficients, which already incorporate the additions of out-of-state migrants, thus inflating the base totals, there is still a dropout rate of about 7 per cent between grades 10 and 11 and of about 10 per cent between Grades 11 and 12. The data in Table 1 indicate that there has been some improvement in the success rates of these grades over the last ten years, but still a substantial dropout rate in these grades continues to exist.

Parenthetically, the status of data-gathering concerning parochial school enrollment is most unsatisfactory. The only agency which compiles such information on a state- and county-wide basis is the California Taxpayers' Association. It is clear, however, that in the realm of primary-secondary education, parochial schools account for 10 per cent of enrollment (with the notable exception of the Los Angeles area, where they account for a much higher percentage). In 1967 legislation was passed requiring parochial schools to report certain enrollment and financial data to the California State Department of Education. This is a step forward, but the problem of "transfers" from the parochial system to the public system, particularly in the transitional grades (6 to 7 and 8 to 9), should be a subject of specific study.

School-Age Population and Enrollment

Table 3 presents data on school-age population and graded enrollments, both in the public and parochial schools of the State of California for 1966. The public and private schools of California enroll 98. 2 per cent of the pertinent age group in primary and 92. 3 per cent in secondary education. If we were to exclude parochial school enrollment, the population-school enrollment ratios for public schools were only 89. 1 per cent for grades 1-8 (ages 6-13) and 86. 0 per cent for grades 9-12 (ages 14-17). Up to grade 9, some 98 per cent of the school-age population is in school, but there is a sharp decline in grades 11 and 12, of 10 and 15 per cent respectively. These aggregate ratios include enrollments in parochial schools. In 1966 4 per cent, 10 per cent and 15 per cent of grade level 10, 11, and 12 respectively were not enrolled in the high schools of the state.

What are the policy implications? Either because of the lack of motivation or because of the inadequacies of the schooling, the high dropout rate persists. The schools do not supply youths with the kind of education that will enable them to participate in work-oriented activity. It is at this point that the seed of trouble is evident. The dichotomy of work-oriented versus academic education in the high schools themselves is self-evident.

Is the high school conceived as producing a work-oriented heterogeneous student output, or is its main purpose to prepare students for post-secondary education? The problem is not merely with vocational education as conceived in the past as a kind of "arts training" for those unable to master academic programs, but rather the development of a new kind of employment-oriented training for those who will not continue in post-secondary institutions or will elect occupation-oriented training in junior colleges or similar-type institutions. It was not the task of this study to examine curricular contents. It is sufficient to point out that throughout the nation there is a widespread movement to develop new "vocational" instruction programs under a variety of names and auspices. The State of California must be fully cognizant in adopting and developing its own "comprehensive" or "organic" occupation-oriented programs.

Based on information (i. e., correlation of the population of respective age groups with actual enrollment by grade) similar to that presented in Table 3, projections of school enrollment by grade level (1-8) in primary schools and by group of grades for

Table 3

SCHOOL-AGE POPULATION IN RELATION TO GRADED ENROLLMENTS IN PUBLIC AND PAROCHIAL SCHOOLS IN THE STATE OF CALIFORNIA, 1966

	A		B	C		
			Graded Enrollment			
Age	Population July 1966	Grade	Public Schools Sept. 1966	Parochial Schools Oct. 1966	Total	Per cent of age group in grade
5	402,000	K	373,600	7,200	380,800	94.7
6	399,000	1	375,400	41,900	418,400	104.8
7	396,000	2	352,200	41,100	393,300	99.3
8	398,000	3	342,500	40,500	383,000	96.2
9	392,000	4	342,700	39,900	382,600	97.6
10	386,000	5	334,600	38,700	373,300	96.7
11	370,000	6	322,200	37,000	359,200	97.1
12	365,000	7	326,500	35,400	361,900	99.1
13	355,000	8	316,400	33,300	349,700	98.5
6-13	3,463,000	1-8	3,087,200	315,000	3,402,200	98.2
14	347,000	9	316,800	24,600	341,400	98.4
15	338,000	10	304,000	21,700	325,700	96.4
16	331,000	11	276,700	19,000	295,700	89.1
17	318,000	12	250,400	17,700	268,100	84.3
14-17	1,334,000	9-12	1,147,900	83,000	1,230,900	92.3

SOURCES: A--California Dept. of Finance; Revenue and Management Agency, California Population-1966, Sacramento, Oct. 1966, p. 13.

B--California State Dept. of Education, Enrollment in California Public Schools--Fall 1966, Sacramento, 1967, p. 5.

C--California Taxpayers' Association, "Parochial School Enrollment: California Counties as of September 1966," mimeo. Jan. 1967, p. 2.

primary (1-8) and secondary (9-12) schools were derived by the California Revenue and Management Agency. These projections are presented in Table 4 and Table 5 respectively. The calculations were not repeated for this study, but the implied (assumed) ratios of enrollment to population are about 90 per cent for elementary public schools (excluding parochial school enrollment) and approximately 85 per cent for secondary public schools in the late 1960's, with slight upward increases (adjustment for linear extrapolation of "trend" for improved school enrollment) in the latter years. To sum up, the estimating technique employed is based on the relationships indicated in Table 3. This raises an additional problem, however.

It is to be noted that these estimates are the only set in existence in the reports of state agencies (parenthetically, the Department of Education does not make forward projections of public school enrollments, which it should be doing under alternative assumptions). The estimates are based on projected population by age groups, which are made under assumed low rates of net migration. The crucial implication is, then, that if such low rates of net migration should not materialize in the late 1960's and throughout the 1970's, the school population will be substantially higher (by some 10 to 25 per cent if the in-migration trends of the early 1960's prevail).

Furthermore, these projections imply that parochial school enrollment will expand at the same rate as public school enrollment, thus absorbing the remaining share (i. e., 10-11 per cent of the respective age groups) in their facilities. In view of the financial strains already experienced by parochial schools, such an assumption may not be warranted, and the proportion of pupils enrolled in parochial schools may decline. In this case, the public school system may have to absorb additional students by the 1980's (anywhere between 5 to 7 per cent of the age group).

Thus, the estimates presented in Table 4 and Table 5 may well be on the minimal side. In any event, during the period 1966-80 the state system of education would have to cope with a minimum expansion of 30 per cent for all grade levels and a minimum expansion of some 50 per cent for secondary schools (grades 9-12). If the migration rates are not "optimistically low" and private school expansion is "slower" than its current absorptive share, then the needs of expanding public school facilities will be significantly higher than the rates of growth indicated above. The state will continue to experience heavy "numerical pressure" to expand its public school facilities.

Public High-School Graduates, Dropouts and Their Further Disposition

The main concern of this study is to verify the output of public secondary schools. The figures in Table 6 summarize annual graduations from grade 12 of the public schools in the State of California and present projections based on assumed graduation rates during the next three decades, relating them to the hypothetical age group of 17-year-olds. If the normal age of school entry is assumed to be 5, the graduates from the 12th grade will be 17 years old. Alternatively, if the age at entry in the first grade is between 5 and 6, graduates may be 18 at the time of graduation. In order to relate graduations to the respective age group, only one age group may be assumed as the base. In absolute numbers, if the age group of 18-year-olds is assumed as the base, it would constitute 315, 000 in 1966. Similarly, for other years, the difference between age group 17 and 18 is only a few thousand persons. The per cent relationship between age group and graduates would not be significantly affected if the base is changed from 17 to 18 or vice versa.

The data in Table 6 present actual graduation figures up to 1967 and extrapolations based on assumed ratios for the year 1970 and thereafter. It is the opinion of this researcher that if the goal of universal secondary education in the state is to be maintained, the burden will fall upon the public schools in the decade of the 1980's and

Table 4

PROJECTED SCHOOL ENROLLMENT IN GRADES 1-8 IN CALIFORNIA PUBLIC SCHOOLS, 1966-1980

Fall	Total	Grades:							
		1	2	3	4	5	6	7	8
1966	2,719,000	375,400	354,700	345,500	342,200	335,500	323,300	327,300	316,600
1967	2,793,200	384,900	364,100	354,200	344,800	344,900	338,200	332,200	330,000
1968	2,850,400	382,100	373,300	363,600	353,500	347,600	347,800	347,500	335,000
1969	2,905,800	384,300	370,700	372,800	363,100	356,500	350,600	357,400	350,500
1970	2,941,200	379,300	372,800	370,100	372,400	366,200	359,600	360,200	360,600
1971	2,958,400	370,000	367,900	372,200	370,100	375,700	369,500	369,400	363,500
1972	2,978,700	374,900	358,900	367,300	372,400	373,500	379,200	379,600	372,900
1973	3,010,300	395,000	363,700	358,300	367,700	375,900	377,000	389,600	383,200
1974	3,049,900	413,200	383,200	363,100	359,000	371,200	379,500	387,300	393,300
1975	3,092,900	427,500	400,800	382,600	363,500	362,600	374,900	389,900	391,100
1976	3,151,800	442,000	414,700	400,200	382,800	366,700	366,400	385,300	393,700
1977	3,221,800	457,000	428,700	414,000	400,200	385,800	370,400	376,500	389,100
1978	3,310,000	471,000	443,300	428,100	414,000	403,200	389,500	380,600	380,300
1979	3,420,200	484,000	456,900	442,600	428,100	417,200	406,800	400,200	384,400
1980	3,538,500	496,000	469,500	456,200	442,600	431,300	420,700	418,000	404,200

Note: Sum of parts may not equal totals because of independent rounding.

SOURCE: State of California, Dept. of Finance, Revenue and Management Agency, California Population 1966, Sacramento, Oct. 1966, p. 16.

Table 5

REPORTED AND PROJECTED STUDENT ENROLLMENT IN KINDERGARTEN AND GRADES 1-12 CALIFORNIA PUBLIC SCHOOLS, 1950 to 1980

Fall	Total	Kinder-garten	Grades 1-8	Grades 9-12
1950	1,661,051	137,153	1,150,935	372,963
1955	2,411,834	232,474	1,659,188	520,172
1960	3,304,485	310,705	2,208,536	785,244
1965	4,121,442	364,816	2,646,113	1,110,513
Projected:				
1966	4,247,000	374,400	2,719,000	1,155,900
1970	4,654,700	361,300	2,941,200	1,352,200
1975	5,067,700	433,800	3,092,900	1,541,000
1980	5,615,300	500,000	3,538,500	1,576,800

Note: Sum of parts may not equal totals because of independent rounding.

SOURCE: State of California, Department of Finance, Revenue and Management Agency, California Population 1966, Sacramento, Oct. 1966, p. 15. Enrollment data, actual and projected, for intermediate years are available in this report.

Table 6

POPULATION GROUP AGED 17 AND TWELFTH GRADE GRADUATES OF PUBLIC SCHOOLS IN THE STATE OF CALIFORNIA, 1950-67 AND 1970-2000 PROJECTION

Year	A Age group of 17-year olds	B Public school graduates from grade 12	C Per cent graduating
Actual:			
1950	(185,000)	74,000	(40.0)
1955	(200,000)	90,800	(45.4)
1960	227,000	148,800	65.5
1961	240,000	160,500	66.9
1962	262,000	167,100	63.4
1963	300,000	172,700	57.8
1964	307,000	208,700	68.0
1965	320,000	227,600	74.3
1966	318,000	242,800	76.4
1967	321,000	(250,000)	77.9
Projected:			
1970	386,000	308,800	80.0*
1975	448,000	367,400	82.0*
1980	472,000	399,200	85.0*
1985	488,000	413,100	85.0*
1990	558,000	502,200	90.0*
1995	630,000	586,000	93.0*
2000	682,000	634,300	93.0*

*Assumed graduation ratios
Figures in parentheses are derived estimates.

SOURCES: Col. A--State of California, Department of Finance, Revenue and Management Agency, California Population 1966, Sacramento, California, Oct. 1966; and State of California, Department of Finance, Revenue and Management Agency, California Population Projections 1965-2000, Sacramento, California, Mar. 1966.

Col. B--Graduates 1960-64 from State of California, Documents Section, California Statistical Abstract 1965, Sacramento, California, 1966, p. 159; graduates 1950, 1955, 1964-67 from unpublished tabulations of State of California, Department of Finance, Revenue and Management Agency. 1970-2000 projection of graduates is based on the assumed graduation ratios in Col. C.

Col. C--Per cent of B over A and assumed ratios based on improvement during the 1960-67 period.

Note: For convenience a single age group of 17-year-olds has been adopted as a base for the "normal" graduating age. The numerical difference between 17- and 18-year-old groups is slight, and the per cent relation of graduates to age groups in either case is about the same.

thereafter, with the private schools accounting for a decreasing proportion of all high school graduates (i. e., this is reflected in the increase of graduates from public high schools from 82 per cent in 1975 to 90 per cent in 1990 of total age group).

It is evident that at the present time only 78 per cent of the appropriate age group graduates from public secondary schools. If we add the estimated number of graduates from private schools (in 1966 about 16,000-17,000), the proportion of the age group completing secondary education in the State would be about 81 per cent. The aforementioned relatives of graduation to population in the corresponding age group are consistent with the data discussed earlier on transitional coefficients (Table 1 and Table 2) and school enrollment-population relatives (Table 3). There is no question as to the correctness of the magnitude--approximately 20 per cent of the age group in California currently does not complete secondary education.

In order to follow up the disposition of the age group, Chart II was constructed on the basis of the graduation data above (including parochial schools) and the actual first-year acceptances in different institutions of higher learning.[8] Of the total number of 17-year-olds in 1966, 19 per cent did not graduate from grade 12, and of those who did graduate from grade 12, 35 per cent did not continue on to any sort of post-secondary education. Thus, better than half of the entire age group either were destined to work-oriented activity or entry into the employment market. Obviously, some entered the inactive population, but the great majority were job-seekers with 12 years or less of education.

There are a number of refinements which could be considered. One of the major complications is the lack of clear-cut differentiation between full- and part-time first-time entrants to institutions of higher education. This is a very complicated problem, with good statistics available for junior colleges but only ambivalent information for the state colleges, the University of California, and private higher educational institutions. If a consistent set of figures for first-time entrants into part-time higher education could be developed, the proportion of those continuing on to higher education would be lowered. Additional refinements could also be introduced. If we consider military service withdrawals (some 20,000 in 1966 in the 18-year age group), or if we do not include private school graduates (some 16,000), then the per cent distribution indicated on flow Chart II would alter slightly. For the public school graduates only and the state system of public higher education, the 1966 ratios of access were: 43 per cent (part- and full-time) entered junior colleges; 6 per cent, the University of California; and 6 per cent, California state colleges. All of these refinements, however, do not detract from the major policy issue--slightly over one-half of persons with 12 or less years of education entered the active labor force or the inactive population. The question is, what, if any, occupation-related training did these persons receive?

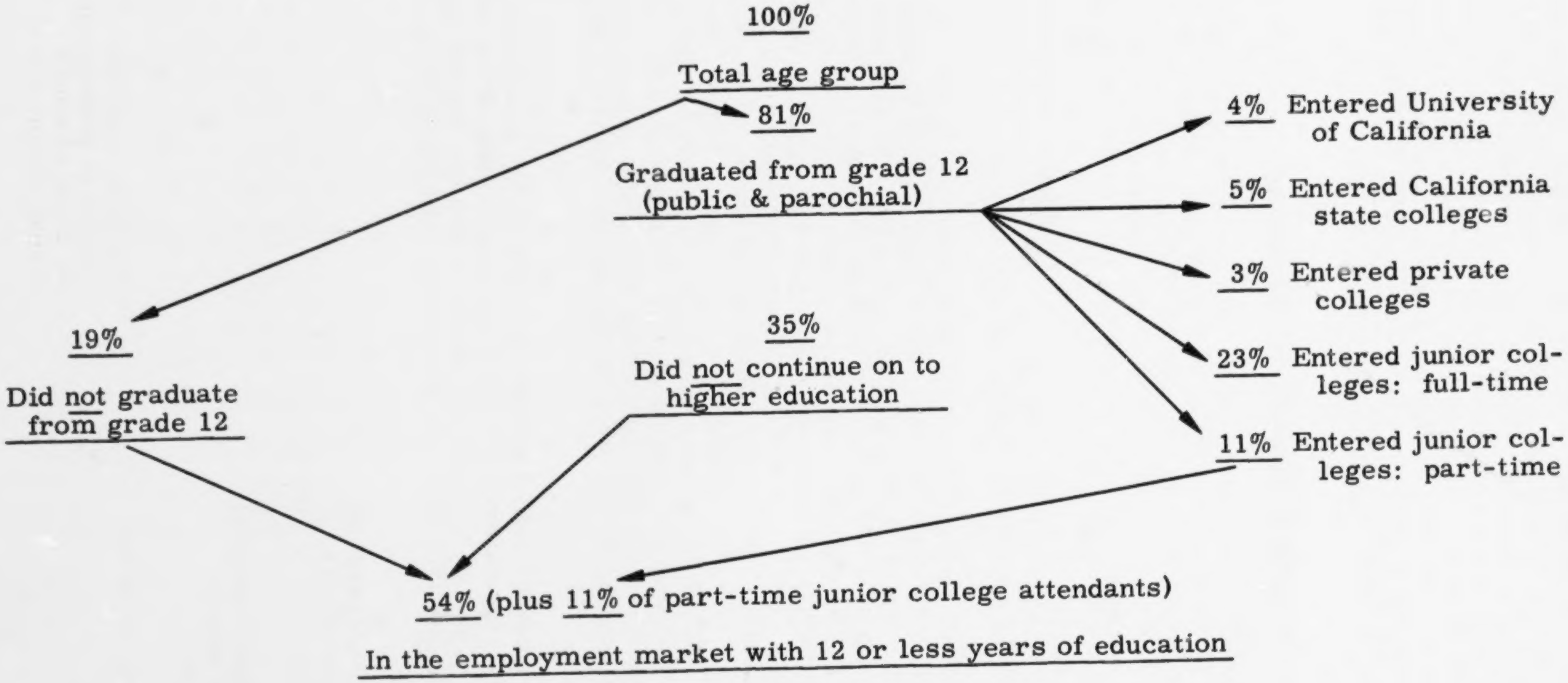
There is only partial evidence which could be pieced together to bear upon this problem. The Annual Reports for vocational education in California are so confusing that this researcher was not able to make sense of them.[9] In 1965-66 it was reported that 225,000 high school students and 156,000 junior college students were taking vocational education "courses." A distinction must be made between single "courses," a specific set of courses comprising a "curriculum," and groups of curriculums as program areas. Students may major in either of the two latter--"curriculums" or "programs" but figures for total enrollment in "courses" are hard to interpret. While for junior colleges there is a reported enrollment by occupation-oriented curriculums (business, engineering, technical, apprentices, health and agriculture) and total enrollment of "majors" by program, one is totally in the dark as to the enrollment by programs and/or curriculums in high schools.

Obviously, one student may take more than one "vocational" educational course. Thus, comparing total enrollment in high schools (1,100,000) with total "course"

CHART II

1966 DISTRIBUTION OF 17-YEAR-OLDS IN THE STATE OF CALIFORNIA BY EDUCATIONAL STATUS

(Total - 320,000)


100%
Total age group
81%
Graduated from grade 12 (public & parochial)
4% Entered University of California
5% Entered California state colleges
3% Entered private colleges
23% Entered junior colleges: full-time
11% Entered junior colleges: part-time
19%
Did not graduate from grade 12
35%
Did not continue on to higher education
54% (plus 11% of part-time junior college attendants)
In the employment market with 12 or less years of education

Note: If the age group of 18-year-olds were to be assumed, the percentages would not alter significantly. The absolute number of 18-year-olds in 1966 was about 315,000. See also discussion in text. Actually, age at graduation from the 12th grade may range from 17 1/4 to 18 3/4 years. For statistical purposes a single age group--17-year-olds--was selected as a base.

enrollment (225, 000) indicates that certainly less than one-fourth of high-school students were enrolled in at least one "vocational" course. Those who took the program or a curriculum in the vocational area were substantially fewer--an arbitrary guess would be less than 10 per cent. This is to be contrasted with the earlier statement that over 50 per cent of the age group enter the labor market with 12 years or less of education. This is only a juxtaposition which should be verified by further special studies. However, the fact is clear that enormous disparity of the availability of occupation-oriented training opportunities exists, and the need for it by persons not continuing education beyond high school is tremendous.

Population Projections by Level of Educational Attainment

In order to verify past trends and potential educational requirements for the active and inactive population, the data on educational attainment should be examined. There is a certain circularity or continuous "feed-back" between present and projected educational attainments. Present educational attainment levels of the population are the function of past school outputs, namely, the population in certain age groups beyond the level normally associated with school attendance. The future educational attainment of the population is the function of current and prospective outputs of the educational system (net of natural attrition). However, the latter--prospective output--is influenced by the currently accepted "image" of what educational attainment should be.

One example will suffice to make this idea of circularity clear. At the turn of the century, the majority of engineers had less than a high-school education. As a result of educational output, the majority of engineers today have 16 years of education, i. e., are college graduates. Therefore the "feed-back" image of minimally required educational attainment is 16 years for engineers. The projected educational attainment is thus 16 years or more of education for engineers, and the educational system is geared to produce such output. A similar argument prevails in establishing the general educational requirements for the population at large. The median level of educational attainment of the entire population is 12 years; hence, due to the feed-back image, all future educational outputs are to be geared to 12 years or more of education. Subjective as it may be, this is simply society's way of continuously "upgrading" its own population through education, and there is hardly any way that the political or social clock can be set back as far as the "demand" for education is concerned.

An examination of the educational attainment levels of the population, present vs. future, provides us with information as to what minimal "outputs" or effort of the educational system are required to meet the needs of this continuous upgrading of the educational process. Statistically, the process of looking at these data is as follows:

A. Ascertain (compute/derive) present levels of educational attainment

B. Ascertain (compute/derive) future levels of educational attainment

C. Derive difference between B and A, plus

Add

D. Ascertain natural losses of population by level of educational attainment

E. Sum of C plus D gives the "needed" new output requirements from the educational system

In essence, this procedure allows for the determination of educational outputs minimally required to perpetuate present and to improve further educational attainment.

Table 7 presents information for 1950 and 1960 on the educational attainment of the California population by number of years of schooling completed. The concern is with the number of persons 18 years old or older who have had four years of high school education or more.

During the decade of the 1950's the California public schools produced 915,000 high-school graduates (Table 6). If the number of parochial school graduates (and this, in the absence of adequate statistics, is just a guess) is added--about 75,000, the total output would have been about 990,000. By comparing the difference in the last row of Table 7, it is evident that during the decade of the 1950's the net increment for the State of persons with 12 years or more of schooling was about 1,767,000. If we do not allow for attrition during the decade of the 1950's, then California gained about 780,000 persons with 12 or more years of education, over and above what it had produced in the state system of education, namely, 990,000 graduates. If we assume the natural attrition during the decade in question as 10 per cent of the 1960 base (this is a crude approximation--a more refined calculation could be made on the basis of survival tables, but for the sake of the present argument, such refinement is not needed), then natural losses were 460,000. Thus the total is 1,240,000 persons with 12 or more years of education--a figure representing net migration to California. These persons were not products of the California system of education. They were migrants from other states.

Essentially, this points up a crucial policy issue; namely, in the 1950's almost two-thirds of the increase in high-level manpower in California was attributable to net migration rather than output from the state educational system. Although at times one hears rather loose talk about "some" contribution from net migration to the California trained manpower pool, it appears that there is a genuine brain-drain from the rest of the nation which benefits California to an exceptional degree. In order to reproduce such resources, the State of California would have to better than double or even triple its actual output of high-level manpower (persons with 12 years or more years of education). Whatever is said about the magnitude of effort by the State of California, the plain fact is that it should have been far greater if it was to satisfy the educational requirements of the State during the last decade.

There are no data for the State of California which project educational attainment levels of the population. In order to estimate the future educational attainment, national projections adjusted to the California base must be used. Table 8 presents data on the actual and projected attainment levels of the United States population, prepared by the U. S. Bureau of the Census.[10] By using standard projection techniques, namely, applying the national trend to the California base, the projected educational attainment levels for the California population can be calculated. They are presented in Table 9. The main question is--what will the school output situation be in the State of California in the 1960's and beyond?

There are two ways of looking at this situation--one in relative terms (per cent distribution by number of years of school completed, as given in Table 8 and Table 9) and the other in absolute terms (converting the per cent distribution to numerical values for different years). In proportionate terms the present rates of educational output (as judged by the rates of high-school completion and access to higher education

Table 7

EDUCATIONAL ATTAINMENT OF CALIFORNIA POPULATION:

YEARS OF SCHOOL COMPLETED, 1950 AND 1960

	1950		1960	
Population aged 25 and older	6,558,000		8,868,900	
Years of school completed:	Per cent	No. of persons	Per cent	No. of persons
None	1.8	114,800	1.9	164,300
Elementary:				
Grades 1-4	5.2	329,700	3.8	340,700
5-7	10.5	669,500	8.9	795,000
8	16.5	1,051,800	13.7	1,212,300
High school:				
1-3 yrs.	18.4	1,171,600	20.2	1,788,000
4 yrs.	27.6	1,758,700	28.3	2,509,900
College:				
1-3 yrs.	11.5	734,500	13.4	1,185,900
4 or more yrs.	8.4	532,700	9.8	872,700
4 years of high school or more	47.5	3,025,900	51.5	4,568,500
Population aged 18-24		1,039,400		1,395,150
Hypothetical number of 18- to 24-year-olds with 4 years of high school or more		493,700		718,500
Hypothetical number of 18-year-olds and older with 4 years of high school or more		3,519,600		5,287,000

SOURCE: U. S. Dept. of Commerce, Bureau of the Census, *United States Census of Population 1960: California, General Social and Economic Characteristics, Final Report PC(1)-6C*, Washington, D. C.: U. S. Government Printing Office, 1962, Tables 46 and 47, p. 6-234-36.

Table 8

EDUCATIONAL ATTAINMENT OF THE UNITED STATES POPULATION, PER CENT DISTRIBUTION BY YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS AND OVER, 1950, 1960 AND PROJECTIONS TO 1985

	Number of years of school completed										
Year	None	1-4	5-7	0-7	8	9-11	0-11	12	13-15	16 or more	12 or more
1950 (actual)	2.6	8.6	16.4	27.6	20.8	17.4	65.8	20.7	7.3	6.2	34.2
1960 (actual)	1.8	6.3	13.3	21.4	17.5	18.9	57.8	26.4	8.2	7.6	42.2
1970 (proj.)	1.5	4.2	10.8	16.5	13.6	20.7	50.8	29.0	10.0	10.2	49.2
Trend 1960-70	0.83	0.66	0.81	0.77	0.78	1.09	0.88	1.14	1.22	1.34	1.17
1980 (proj.)	0.8	2.6	7.5	10.9	9.4	20.8	41.1	34.1	11.5	13.3	58.9
Trend 1960-80	0.44	0.41	0.56	0.51	0.54	1.10	0.71	1.29	1.40	1.75	1.40
1985 (proj.)	0.6	2.0	6.1	8.7	7.5	20.4	36.6	36.4	12.3	14.7	63.4
Trend 1960-85	0.33	0.32	0.46	0.41	0.43	1.08	0.63	1.38	1.50	1.93	1.53

Note: Projections to 1985 are based on the so-called "A-Series," namely an increase in the rate of change of educational attainment proportionate to the rate of change of passage rates of students over the past two decades.

SOURCES: 1950 and 1960 data from U. S. Dept. of Commerce, Bureau of the Census, Current Population Reports: Population Characteristics, Series P-20, No. 291, Washington, D. C., Jan. 12, 1959, Table 2, pp. 8-9. Projections to 1985 (retabulated by author) from U. S. Dept. of Commerce, Bureau of the Census, Current Population Reports: Population Estimates, Series P-25, No. 305, Washington, D. C., Apr. 14, 1965, Table 2, pp. 14-16.

Table 9

EDUCATIONAL ATTAINMENT OF THE STATE OF CALIFORNIA POPULATION, PER CENT DISTRIBUTION BY YEARS OF SCHOOL COMPLETED BY PERSONS 25 YEARS AND OVER, 1950, 1960 AND PROJECTIONS TO 1985

	Number of years of school completed										
Year	None	1-4	5-7	0-7	8	9-11	0-11	12	13-15	16 or more	12 or more
1950 (actual)	1.8	5.2	10.6	17.6	16.5	18.4	52.5	27.6	11.5	8.4	47.5
1960 (actual)	1.9	3.8	8.9	14.6	13.7	20.2	48.5	28.3	13.4	9.8	51.5
1970 (proj.)	NC	NC	NC	10.6	10.2	20.8	41.6	30.6	15.4	12.4	54.4
1980 (proj.)	NC	NC	NC	6.7	6.8	20.3	33.8	33.3	17.2	15.7	66.2
1985 (proj.)	NC	NC	NC	5.3	5.3	19.5	30.1	35.0	18.0	16.9	69.9

SOURCES: Data for 1950 and 1960 from U. S. Dept. of Commerce, Bureau of the Census, United States Census of Population 1960; California: General Social and Economic Characteristics, Final Report PC (1)-6C, Washington, D. C.: U. S. Government Printing Office, March 1962, Table 47, p. 6-235. Projections for 1970, 1980 and 1985 are based on U. S. national projections (Table 8) adjusted for the State of California 1960 distribution. Estimating technique: (1) derive national trend (matrix cell of future year divided by matrix cell of base year); (2) multiply state distribution (matrix cell of base year) by national trend factor to obtain future year values; (3) by pro-rating, arrive at future year distribution.

NC--Not computed

presented in Chart II) exceed the actual (1960) educational attainment ratios. This means that the California educational system is currently geared to produce outputs proportionate to past educational attainment ratios. If the present trend prevails, in the 1970's and 1980's the secondary schools will undoubtedly be also geared to produce the required proportions of graduates and of school leavers. There is, however, a need to expand the access rates to higher education (particularly of four or more years) if the future proportion of college graduates is to be produced at the projected rates. With the total number of degrees (from 4-year colleges or more) granted in the State by public and private universities of 40,000 (in 1966), which represents approximately 12 per cent of the age group, the output is about in proportionate "balance" (i.e., about the same proportion as the projected 1970 educational attainment ratio for persons with 16 or more years of education). However, this ratio is too low to satisfy the requirements in the 1980's. It was beyond the terms of reference of this study to deal with higher education college graduates, but it must be stated that the dependence of the State of California upon the importation of persons with 16 or more years of education indeed staggers the imagination (see calculations below).

This matching of "proportions" is deceptive, however, for in absolute terms the State will either have a significant need to "import" high-level manpower, or to step up its own indigenous (within state) educational effort. Converting the per cent distributions (Table 9) of projected educational attainment (i.e., "need") and comparing these with projected outputs of high-school graduates (derived from Table 6) result in the following calculations:

Situation during the Decade of the 1960's:

A. Number of persons with 12 or more years of education (1960)	4,570,000
B. Number of persons with 12 or more years of education (1970)	8,156,000
C. Difference, B minus A	3,586,000
D. Assumed natural attrition of 10 per cent of 1970 base	816,000
E. Total "new" additions requirement for persons with 12 or more years of education	4,402,000

The expected output of high-school graduates by the State system of education during the decade of the 1960's will be about 2,000,000. Compared with the requirement for "new output" of 4,402,000 during the decade, it is obvious that a net import (migration) of about 2,400,000 would be required. Obviously, if the natural attrition is somewhat less or if the in-state output of graduates is greater, the figure of required net migration for high-level manpower might be somewhat reduced. The approximate magnitude, however, will remain about the same: California would need a net migration of over 2,000,000 persons with 12 or more years of education to maintain the educational attainment levels of its population. At least one-fourth of the total high-level manpower by 1970 must be covered from sources outside the state.

Situation During the Decade of the 1970's:

A. Number of persons with 12 or more years of education (1970)	8,156,000
B. Number of persons with 12 more more years of education (1980)	12,530,000
C. Difference, B minus A	4,374,000

D. Assumed natural attrition of 10 per cent of 1980 base	1,253,000
E. Total "new" additions requirement for persons with 12 or more years of education	5,627,000

The expected output of high-school graduates by the State system of education during the decade of the 1970's will be about 3,000,000 persons. Compared with the requirement of "new output" of 5,627,000 during the decade, a net import of 2,627,000 persons with 12 or more years of education would be needed to meet the requirements by 1980.

Granted, all the aforementioned calculations are approximate and these data indicate a decreasing dependence on the part of the State upon imported high-level manpower, the corollary proposition remains true. There must be a substantial increase in the annual output of high-school graduates from the State system. This should be achieved not by a mere increment in enrollment, but by a substantial improvement in the success rates of students in secondary schools and a corresponding reduction in the dropout rate.

There is still an additional alternative. If the 65 to 70 per cent of the total adult population of the State is to be brought to a level of educational attainment of 12 or more years, the State could intensify its continuing and remedial education and thus reduce the net import requirement for high-level manpower. In either case, a far greater effort and far greater efficiency by the State educational establishment would be needed in order to reduce its dependence on the net migration of high-level manpower, as well as the expansion of in-state facilities to educate the population of the state.

Aside from public primary-secondary education, one of the major problems in the State of California is that although the rates of access to post-secondary education are high, the actual output of graduates from both the public and private systems of higher education in the State remains considerably below requirements, which can be ascertained on the basis of educational requirements for the population. If we assume that 46 per cent of the age group (Chart II) continued on to some sort of higher education in the State, the actual output of all university degree awards (16 or more years of education) from all public and private institutions in the state was only 40,000 in 1966.

This study cannot be entangled in a lengthy survey of those Californians who studied elsewhere in the nation, nor in a statistical assessment of the share of non-California residents who are graduates of California institutions of higher education. However, although 46 per cent of the respective age group (17- or 18-year-olds) of Californians entered one type of higher education or another in 1966, only about 12 per cent of the respective age group (21- or 22-year-olds) completed higher education in the State.

Such low rates of success have direct relevance for policies concerning post-secondary education in the State and bear an indirect implication for educational policies in public primary-secondary schools. If only about one-quarter of the age group who enters higher education succeeds in completing it, there is an obvious need to strengthen secondary education for those who continue on to college and to provide occupation-oriented training for those who fall by the wayside. Whatever the case, the situation of in-state education to meet its needs for college graduates from the indigenous population is most inadequate. Table 10 summarizes the actual and projected trends concerning the requirements and supply of persons with 16 years of education or more.

Table 10

COLLEGE GRADUATES IN THE STATE OF CALIFORNIA: REQUIREMENTS AND OUTPUT OF PERSONS WITH 16 OR MORE YEARS OF EDUCATION, 1950-1980

Stocks		
Persons with 16 years or more of education in the population, 21 years and older:		
	1950 (actual)	532,000
	1960 (actual)	873,000
	1970 (projected)	1,625,000
	1980 (projected)	2,744,000
Natural Attrition		
Attrition (at 10 per cent of 1960 base), 1950-59		87,000
Attrition (at 10 per cent of 1970 base), 1960-69		163,000
Attrition (at 10 per cent of 1980 base), 1970-79		274,000
New Additions--Gross Requirement		
For 1950-59		428,000
For 1960-69		915,000
For 1970-79		1,393,000
Output of Graduates with 16 or More Years of Education from Public and Private Colleges of the State of California		
1950-59 (actual)		180,000
1960-69 (estimated)		380,000
1970-79 (anticipated)		550,000

SOURCES:

Stocks: Table 8 and Table 9; population 21 and older from: State of California, Department of Finance, Revenue and Management Agency, *California Population Projections, 1965-2000*, Sacramento, March, 1966, *passim.*

Natural attrition: Computed at 10 per cent of base year.

New additions--gross requirement: Difference between respective rows in "stocks" plus "Natural Attrition" figures.

Output of graduates: State of California, Documents Section, *California Statistical Abstract, 1967*, Sacramento, 1967, p. 110; anticipated data for 1970 derived from: State of California, Department of Finance, *Projections of Enrollment for California's Institutions of Higher Education, 1965-75*, Sacramento, October, 1960, *passim.*

On the basis of the data in Table 10, it is evident that the output of college graduates from the California system of higher education in the 1950's was able to meet the needs of the State by only two-fifths. A similar situation prevails in the 1960's -- the California production of college graduates accounts for only two-fifths of the gross additions needed. Even if the optimistic projections for higher education materialize, only about one-third of the gross demand for higher education graduates will be met by California institutions of higher education in the 1970's. Three education policy issues are paramount from these data:

1. The State of California is totally deficient in producing its own indigenous college graduate population.

2. Unless there are substantial improvements in the quality of secondary education, the ineffectiveness of tertiary education will continue.

3. If there is such difficulty in retaining higher education students until the completion of their education, occupation-oriented education must be introduced into all higher educational institutions, and particularly into junior and community colleges.

The gross magnitudes discussed above are indicative, however. This entire problem of California's self-sufficiency in producing personnel with 16 or more years of education must be thoroughly investigated and monitored on a continuing basis. The recent report to the Joint (Legislative) Committee on Higher Education clearly supports this need:

> Greater effort should be given to assembling information on the migration patterns of persons receiving higher education in California. The extent to which they migrate outside the county in which they were educated (if they attended a Junior College), and outside the state itself (if they attended a State College or the University) deserves exploration. . . . Similarly, the extent to which people receiving higher education elsewhere move into California and become taxpayers is also of considerable interest in examining the trade "balance" in educated people.[11]

Occupational Requirements by Educational Attainment

The greatest preoccupation in setting targets for education, derived from manpower needs, rests not solely with the educational attainment levels of the total (or adult) population as discussed above, but with the active population, i. e., persons in the labor force. In California, labor force participation rates for the population aged 14 and older are about 60 per cent,[12] which is somewhat higher than the national average of about 52 per cent. The standard procedure for examining data on occupational requirements is to devise an employment matrix by industry sector, rearrange this matrix by occupation within each industry sector, and finally sum up by specific occupations or by broad occupational groups the past, current or projected manpower needs. The next step in deriving educational prerequisites is to assign educational attainment levels for each occupation or for broad occupational groups. The occupational classification developed by the U. S. Bureau of the Census deals with 479 specific occupations, which are then classified into 11 major occupational groups.[13] Obviously, the present study could not deal with specific occupations, and the data dealt with below refer to major occupational groups only.

The various state departments of California do not make employment projections for the State either by industry sector or by occupation. There are a number of private efforts which use the U. S. Department of Labor (Bureau of Labor Statistics) or the National Planning Association technique of projecting employment in relationship to population under assumed ratios of participation or by the use of matrices of employment. The California Department of Employment makes tabulations of employment in the state by industry sector.[14] The office in Sacramento is contemplating an exercise which would project the occupational requirements of California for the year 1975, based on national matrices prepared by the Bureau of Labor Statistics. In view of this, the present report had to proceed without recourse to a data bank which should exist in state agencies, but does not.

Table 11 summarizes data from a still unpublished study of the Bureau of Labor Statistics, projecting occupational requirements for the United States for 1975.[15] On the basis of these data and by adjusting them to California trends, 1975 estimates of occupational requirements for the State of California are made. These data are presented in Table 12. In addition, extrapolating the trends for 1965-75 to the period 1975-85 allows for a projection (however crude) of the occupational composition of the employed civilian labor force of the State of California for the year 1985. These data are also presented in Table 12.

Three major observations should be noted:

1. A continuing and most rapid increase in the occupational groups which constitute white-collar occupations;
2. Some growth, but not as rapid, in the blue-collar and service occupations;
3. Continuing decline in agricultural occupations.

There is no surprise in identifying these trends. What is important, however, is to note that if the guidance and counseling in schools is to be improved, it is this type of information which must be clearly understood by the counsellors themselves and particularly kept in mind by the students selecting career choices.

In order to accomplish this (and data similar to those presented in Table 11 and Table 12 are neither published nor publicized), and particularly if the disaggregation for specific occupations is made, the State of California should develop and make available to the schools a computer utility which could be used for guidance and counseling. Such computer utilities are already being developed in other states (and groups of school districts, particularly those in urban metropolitan areas). The State Committee on Public Education should point up the need and propose that such a utility be developed under the auspices of the California State Manpower Council or Human Resource Development Board. The computer utility for occupational guidance and counseling should be subsidized by the State Department of Education, and probably should be made available to school districts on an additional "fee" or "subscription" basis. It is mandatory, however, that the State Manpower Council or Human Resources Development Board ask the respective Departments of Employment, Industry, Health, etc., to cooperate and provide information for such an in-state occupational guidance facility.

As already indicated, the agencies of the State of California do not deal either with occupational projections or with educational attainment data by occupational groups. Such data for the employed civilian population are available for census years and are developed by the Bureau of Labor Statistics on a periodic basis. Tables 13 and 14 summarize educational attainment data for the employed population of the United States for March of 1959 and March of 1966. It is the last column in each table which is relevant. These data can be utilized for projecting the requirements for persons having 12 or more years of education, namely, high-school graduates and those with post-secondary education (or any sub-group by level of educational

Table 11

EMPLOYMENT BY MAJOR OCCUPATIONAL GROUP, UNITED STATES, 1960, 1965 and 1975 PROJECTION

Occupational Groups	1960	1965	1975	Nat'l growth trend 1960-75	Nat'l growth trend 1965-75
White-collar workers	28,726,000	32,104,000	42,500,000	1.480	1.320
Professional and technical	7,475,000	8,883,000	12,900,000	1.725	1.450
Managers, officials and proprietors	7,067,000	7,340,000	9,200,000	1.301	1.250
Clerical workers	9,783,000	11,166,000	14,600,000	1.492	1.310
Sales workers	4,401,000	4,715,000	5,800,000	1.317	1.230
Blue-collar workers	24,211,000	26,466,000	30,140,000	1.240	1.140
Craftsmen and foremen	8,560,000	9,221,000	11,400,000	1.331	1.240
Operatives	11,986,000	13,390,000	15,000,000	1.251	1.200
Non-farm laborers	3,665,000	3,855,000	3,740,000	1.020	0.970
Service workers	8,349,000	9,342,000	12,560,000	1.504	1.340
Farmers and farm workers	5,395,000	4,265,000	3,460,000	0.652	0.810
TOTAL	66,681,000	72,179,000	88,660,000	1.330	1.230

Note: Occupations not reported or not classified by occupation have been excluded. In 1960 this category accounted for about 2,000,000 persons.

SOURCE: Data for 1960 and 1975 abstracted from U. S. Department of Labor, Bureau of Labor Statistics, Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections, 1967 (unpublished draft), Appendices G and H. 1960 data from Table 91 (p. 534). Trend coefficients computed.

Table 12

EMPLOYMENT BY MAJOR OCCUPATIONAL GROUPS, STATE OF CALIFORNIA, ACTUAL FIGURES FOR 1960 AND PROJECTED FIGURES FOR 1975 AND 1985

	1940	1950	1960	1960-75 national growth rate	Calif. 1975 Projection	Assumed 1975-85 growth factor	Calif. 1985 Projection
White-collar workers:	1, 079, 000	1, 758, 500	2, 723, 900	--	4, 081, 300	--	5, 448, 200
Professional and technical	262, 600	432, 500	787, 900	1. 725	1, 376, 400	1. 45	1, 995, 800
Managers, officials and proprietors	266, 600	441, 900	550, 800	1. 301	716, 600	1. 25	895, 000
Clerical	283, 700	550, 100	937, 200	1. 492	1, 398, 300	1. 31	1, 831, 400
Sales	266, 100	334, 000	448, 000	1. 317	590, 000	1. 23	726, 000
Blue-collar workers:	854, 200	1, 413, 000	1, 905, 900	--	2, 391, 700	--	2, 861, 300
Craftsmen and foremen	327, 700	594, 500	803, 600	1. 331	1, 069, 600	1. 24	1, 326, 300
Operatives	371, 300	598, 500	855, 800	1. 251	1, 070, 600	1. 20	1, 291, 000
Laborers	155, 200	220, 000	246, 500	1. 020	251, 500	0. 97	244, 000
Service workers	316, 500	432, 900	599, 100	1. 504	901, 000	1. 34	1, 207, 300
Farmers and farm workers	246, 600	264, 100	222, 200	0. 652	144, 900	0. 81	117, 400
TOTAL	2, 496, 300	3, 868, 500	5, 451, 100	--	7, 388, 400	--	9, 634, 200

Note: Occupations not reported or not classified by occupation have been excluded. In 1960 this category accounted for approximately 200, 000 persons.

SOURCE: 1940, 1950, and 1960 tabulations based on data in U. S. Dept. of Commerce, Bureau of the Census, United States Census of Population 1960; California: General Social and Economic Characteristics, Final Report PC (1)-6 C, Washington, D. C.: U. S. Government Printing Office, March 1962, Table 59, p. 6-245. National growth factors are assumed on the basis of U. S. data (Table 11). Growth factors are based on BLS matrix. Due to aggregation, BLS reporting by occupational group shows an 87 to 95% fit with census data for 1960. No "reconciliation adjustments" were made.

Table 13

EDUCATIONAL ATTAINMENT (YEARS OF SCHOOLING COMPLETED) OF THE EMPLOYED CIVILIAN POPULATION OF THE UNITED STATES, 18 YEARS AND OVER, MARCH 1959

	Number of years of school completed							
Occupational groups	0-7	8	9-11	0-11	12	13-15	16 or more	12 or more
White-collar workers:								
Professional and technical	1.7	1.7	3.5	6.9	18.3	18.7	56.1	93.1
Managers, officials and proprietors	10.2	12.3	16.3	38.8	32.3	15.7	13.1	61.1
Clerical workers	3.0	5.7	13.8	22.5	58.1	14.5	4.9	77.5
Sales workers	6.7	10.6	16.8	34.1	39.9	16.0	10.1	66.0
Blue-collar workers								
Craftsmen and foremen	15.1	18.7	25.8	59.6	32.4	5.9	2.1	40.4
Operatives	21.4	21.0	28.4	70.8	25.0	3.5	0.8	29.3
Non-farm laborers	41.6	17.4	21.2	80.2	16.6	2.8	0.5	19.9
Service workers	26.2	19.7	23.9	69.8	24.0	4.8	1.4	30.1
Farmers and farm workers	35.9	24.8	14.8	75.5	19.1	3.8	1.4	24.3
TOTAL	16.2	14.6	19.0	49.8	30.7	9.4	10.0	50.1

SOURCE: U. S. Dept. of Labor, Bureau of Labor Statistics, Educational Attainment of Workers, 1959, Special Labor Force Report No. 1, reprinted from Monthly Labor Review, Feb. 1960, reprint No. 2333, p. A-12. For convenience, the years of schooling completed have been reclassified in sequential order, i. e., 9-12--high school; 13-16--college.

Table 14

EDUCATIONAL ATTAINMENT (YEARS OF SCHOOLING COMPLETED) OF THE EMPLOYED CIVILIAN POPULATION OF THE UNITED STATES, 18 YEARS AND OVER, MARCH 1966

Occupational groups	Number of years of school completed							
	0-7	8	9-11	0-11	12	13-15	16 or more	12 or more
White-collar workers:								
Professional and technical	0.4	1.0	3.2	4.6	18.3	17.9	59.1	95.3
Managers, officials and proprietors	5.2	7.6	14.0	26.8	35.8	17.9	19.6	73.3
Clerical workers	1.6	4.0	12.4	18.0	60.9	16.4	4.8	82.1
Sales workers	4.1	7.5	18.3	29.9	43.3	15.4	11.3	70.0
Blue-collar workers:								
Craftsmen and foremen	11.4	15.3	24.5	51.2	39.9	7.2	1.7	48.8
Operatives	16.2	17.3	28.6	62.1	33.0	4.2	0.6	37.8
Non-farm laborers	27.8	18.1	25.3	71.2	24.3	4.1	0.4	28.8
Service workers:	18.5	15.8	25.3	59.6	32.5	6.8	1.1	40.4
Farmers and farm workers:	30.2	24.5	14.9	69.6	24.8	3.8	1.8	30.4
TOTAL	10.6	11.3	18.6	40.5	36.5	10.9	12.1	59.5

SOURCE: U. S. Dept. of Labor, Bureau of Labor Statistics, Educational Attainment of Workers, March 1966, Special Labor Force Report No. 83, reprinted from Monthly Labor Review, June 1967, reprint No. 2528, p. A-13. For convenience, the years of schooling completed have been reclassified in sequential order, i.e., 9-12--high school; 13-16--college.

attainment). These data may also be used to make estimates for other cells of the educational attainment matrix (an exercise outside the scope of the present study). Thus combining the information in Table 11 and Table 12 with that in Table 13 and Table 14, the present and projected requirements of persons with 12 or more years of education can be derived for the state.

The data on actual and projected employment of high-level manpower (persons with 12 or more years of education) are presented in Table 15 and Table 16. These data have to be considered in conjunction with the population by corresponding level of educational attainments. In 1960, out of a total number of 5, 287, 000 persons with 12 or more years of education in the population, 2, 950, 000, or some 55. 8 per cent, were actually employed in the civilian labor force. In other words, about 45 per cent of those with 12 or more years of education were in the inactive population. The rate of employment of high-level manpower in the state was not significantly different from the labor force (to adult population) participation ratios.

If we assume that the educational attainment ratios of 1966 for the civilian labor force will prevail in 1975, or if we alternatively assume the continuing rate of improvement of educational attainment by occupational group, we can derive the 1975 requirement for California for persons with 12 or more years of education. This information is presented in Table 16. The relevant consideration, of course, is that better than half of the total gainfully-employed labor force will need, even in 1975, 12 or more years of education. The Version II estimate of Table 16 might perhaps be too optimistic in projecting 1959-67 trends for the entire period 1960 to 1975, but in this case well over two-thirds of the total labor force would be required to have 12 or more years of education.

Since the biggest growth will occur in occupations where high levels of educational attainment are expected to prevail (such as professional technical workers, where 60 per cent have 16 or more years of education), the public secondary schools must therefore be prepared to respond to a duality of needs--on the one hand (as argued above), they must provide occupation-oriented training for school-leavers and those who will not continue on to higher education; and, on the other, they must improve the quality of education for those entering occupations requiring college or post-college education.

Regional Differences in Performance of California Public Schools

It is a well known fact that the State of California has the largest educational system with the highest per capita and the highest per pupil expenditure in the nation.[16] However, there is a large degree of disparity in the efficiency of school performance and a high degree of inequality in the support of education throughout the State. According to the California Education Code:

> The system of public school support should provide, through the foundation program, for essential educational opportunities for all who attend the public schools.[17]

The data presented below clearly indicate that such an objective is currently not being fulfilled, and the entire program of state support for education must be thoroughly re-examined in the light of the principle of equity and some reasonable judgment about "success" in producing educational outputs.

Initially, this study intended to produce a number of computations of correlation and regression coefficients between different per-student cost variables and outputs of the educational system. This attempt had to be abandoned, however, largely

Table 15

ESTIMATED EMPLOYMENT BY OCCUPATIONAL GROUP AND EDUCATIONAL ATTAINMENT OF PERSONS WITH TWELVE OR MORE YEARS OF SCHOOLING IN THE STATE OF CALIFORNIA, 1960

Occupational group	1960 California employment	1959 ratio	Total persons with 12 or more years of education
White-collar workers	--	--	2,092,000
Professional and technical	787,900	93.1	733,500
Managers, officials and proprietors	550,800	61.1	336,500
Clerical workers	937,200	77.5	726,300
Sales workers	448,000	66.0	295,700
Blue-collar workers	--	--	624,400
Craftsmen and foremen	803,600	40.4	324,600
Operatives	855,800	29.3	250,700
Non-farm laborers	246,500	19.9	49,100
Service workers	599,100	30.1	180,300
Farmers and farm workers	222,200	24.3	54,000
TOTAL	--	--	2,950,700

SOURCES: Table 12 and Table 13. The 1960 stock of persons with 12 or more years of education actually employed is an underestimate, for in the calculations the category of persons in "occupation not reported" has been excluded.

Table 16

ESTIMATED EMPLOYMENT BY OCCUPATIONAL GROUP AND EDUCATIONAL ATTAINMENT OF PERSONS WITH TWELVE OR MORE YEARS OF SCHOOLING IN THE STATE OF CALIFORNIA, 1975

Occupational group	1975	1966 actual attainment ratio	Persons with 12 or more yrs. educa.	1975 trend-adj. ratios	Persons with 12 or more yrs. education
White-collar workers	--	--	3, 004, 700	--	3, 652, 000
Professional and technical	1, 376, 400	95. 3	1, 330, 400	97. 4	1, 340, 600
Managers, officials and proprietors	716, 600	73. 3	525, 300	91. 1	652, 800
Clerical workers	1, 398, 300	82. 1	1, 148, 000	87. 3	1, 220, 700
Sales workers	590, 000	70. 0	410, 000	74. 4	439, 000
Blue-collar workers	--	--	999, 100	--	1, 292, 900
Craftsmen and foremen	1, 069, 600	48. 8	522, 000	60. 2	643, 900
Operatives	1, 070, 600	37. 8	404, 700	50. 5	540, 600
Non-farm laborers	251, 500	28. 8	72, 400	43. 1	108, 400
Service workers	901, 000	40. 4	364, 000	56. 6	510, 000
Farmers and farm workers	144, 900	30. 4	44, 000	61. 2	88, 700
TOTAL	--		4, 451, 800		5, 543, 600
			Version I		Version II

Note: The Version II estimate is perhaps too optimistic in projecting 1959-66 trends for the entire period of 1960-75.

SOURCE: Estimates derived as follows:

Version I: By applying 1966 U. S. national ratios of educational attainment (Table 14) to 1975 California base (Table 12).

Version II: By linear extrapolation of 1959 (Table 13) to 1966 (Table 14) U. S. national trend of educational attainment ratios applied to 1975 California base (Table 12).

because of the absence of a comprehensive set of data and partly because of the limitations of time and financial resources allocated. Instead, the data below present a partial analysis of intra-state differences in school performance.

It must be noted in general that social and economic statistics are obtained either through census information or on the basis of surveys. In both cases, the collection and processing are extremely time-consuming and highly expensive undertakings. The collection of statistics without a prior and definite indication of the purpose for which they are to be used is often a wasteful undertaking. One needs to determine the questions needing answers before beginning data-gathering. The data thus collected can fill a definite purpose and if they are correctly organized, can be a point of departure for other statistical compilations serving as the fundamental information for basic policy decisions.

Without doubt, the present collection and processing of statistical information (such as enrollments, graduations, average daily attendance by school districts, and related educational expenditures) by the California Department of Education leave much to be desired. Although these data are used for the purposes of reallocation of state funds for public education, they are nevertheless often devoid of any operational meaning as far as cost-effectiveness techniques in making decisions about the allocation of educational resources are concerned.

The performance of pupils in an educational system could be judged by I. Q. tests or some other achievement tests (in reading, arithmetic, etc.). A variety of such tests are given in the California schools, though their results are seldom made public. The educational "output" (and thus performance of the school system) can also be judged by transitional coefficients (Table 1 and Table 2 above; see also Table 18 below) and the rates of access of graduates of high schools to institutions of higher education (Chart II above; Table 19 below). The test of equity can be made by comparing the educational costs per pupil with the "success rates" of students, as stated above. Obviously the educational costs and "success rates" must be compared within the state in the context of some geographic grouping of school districts or school systems. Since there are different kinds of school district arrangements (elementary, high school, unified) within the State of California and since there is a significant degree of movement within as well as between districts, larger aggregates should be constructed. Obviously, the use of statistics in financing education has to be handled with great care. Sources of educational funds (local, state and federal) and the taxation base vary substantially among districts. The purpose of this exercise, however, is not to examine the revenue side of the educational budgets, but to focus attention on the differences in the real resource costs of education among the different economic areas of the state.

This study has adopted groupings by California State Economic Areas [18] as aggregates. The data for individual counties have been used as a base[19] from which area aggregates were derived by grouping as follows:

Standard Metropolitan (Statistical) Areas:	Counties Included:
San Francisco-Oakland	Alameda, Contra Costa, Marin, San Francisco, San Mateo
San Jose	Santa Clara
Sacramento	Placer, Sacramento, Yolo
Stockton	San Joaquin
Fresno	Fresno
Los Angeles-Long Beach	Los Angeles
San Diego	San Diego

San Bernardino-Riverside-Ontario--------Riverside, San Bernardino
Bakersfield------------------------------Kern
Santa Barbara--------------------------Santa Barbara
Anaheim-Santa Ana-Garden Grove--------Orange
Vallejo-Napa-----------------------------Napa, Solano
Oxnard-Ventura-------------------------Ventura
Salinas-Monterey-----------------------Monterey

Non-Metropolitan Areas:

Northern Coast--------------------------Del Norte, Humboldt, Lake, Mendocino
North Central Coast---------------------Sonoma
South Central Coast---------------------San Benito, San Luis Obispo, Santa Cruz
Sacramento Valley----------------------Butte, Colusa, Glenn, Sutter, Tehama, Yuba
North San Joaquin Valley---------------Merced, Stanislaus
South San Joaquin Valley---------------Kings, Madera, Tulare
Imperial Valley-------------------------Imperial
Sierra-----------------------------------Alpine, Amador, Calaveras, El Dorado,
Inyo, Lassen, Mariposa, Modoc, Mono,
Nevada, Plumas, Shasta, Sierra, Siskiyou,
Trinity, Tuolumne

An examination of data by these economic areas of the state reveals the findings presented below.

Differential rates of access. Table 17 summarizes information from the 1960 *Census of Population* on the proportion of the age group 14-17 enrolled in (secondary) schools. The corresponding data for the age group 5-13 indicate that in all counties (and economic areas) there is no substantial variation of school enrollment to population ratios for grade 8 or below. Close to 99 per cent of all children are enrolled in school at these ages. The significant differences start with grade 9 and beyond, and these differences should be of particular concern to educational policy--what specific measures could be introduced in different areas in order to increase school enrollments to make secondary education truly universal?

Dropout Rates. Table 18 presents a tabulation of transitional coefficients (similar to those discussed for the total state in Table 1 and Table 2) between various grades of the secondary school, relating fall enrollments of 1962 to fall enrollments in 1963. The 10-year trend should have been examined more precisely on the basis of "averages," but one year's transitional coefficients (selected in the middle of the time-span interval of "improving" coefficients) are sufficient to indicate regional differences of school performance. It is mostly the major metropolitan areas which display the *higher* dropout rates and average indices above the statewide mean in transitional coefficients. Hence, in terms of educational policy, it is in these areas that school-retention or occupation-oriented training has to be improved and/or intensified.

Access to Post-Secondary Education. Table 19 summarizes the rates of access of 1965 high-school graduates of California public schools to public institutions of higher education (first-year entrants in the fall of 1965). With some minor exceptions, when junior college entrants are included, the aggregate rates of access of high-school graduates to higher education do not show great variation throughout the state. The exceptions are those areas where junior colleges are less developed. However, when the access rates to California state colleges and the University of California are considered, there is enormous variation among the different areas. The access rates in metropolitan areas are significantly higher than those in non-metropolitan areas. In conjunction with the data on educational-economic characteristics of state economic areas (see below), the high access rates to California state colleges and the University

Table 17

PROPORTION OF YOUTHS AGED 14-17 ENROLLED IN SCHOOL AND INDEX OF SCHOOL ENROLLMENT BY ECONOMIC AREAS OF THE STATE OF CALIFORNIA, 1960

Area	Proportion of 14-17 year olds in school	Index
State Total	89. 7	100
Standard Metropolitan (Statistical) Areas:		
San Francisco-Oakland	92. 8	104
San Jose	91. 6	102
Sacramento	92. 8	103
Stockton	85. 6	95
Fresno	87. 7	98
Los Angeles-Long Beach	90. 3	101
San Diego	81. 8	91
San Bernardino-Riverside-Ontario	91. 3	102
Bakersfield	89. 4	100
Santa Barbara	89. 0	99
Anaheim-Santa Ana-Garden Grove	90. 4	101
Vallejo-Napa	91. 2	102
Oxnard-Ventura	89. 0	99
Salinas-Monterey	74. 6	83
Non-Metropolitan Areas:		
Northern Coast	89. 3	99
North Central Coast	88. 4	99
South Central Coast	90. 8	101
Sacramento Valley	92. 3	103
North San Joaquin Valley	88. 2	98
South San Joaquin Valley	87. 2	97
Imperial Valley	86. 8	97
Sierra	93. 0	104

SOURCE: Retabulated from U. S. Department of Commerce, Bureau of the Census, *United States Census of Population, 1960: California, General Social and Economic Characteristics,* PC(1), 6C, Washington, D. C.: U. S. Government Printing Office, 1962, Table 83. Aggregation of county data by economic areas according to classification in text above.

Table 18

DROPOUT RATES (TRANSITIONAL COEFFICIENTS), GRADES 9-10, 10-11, 11-12, BY CALIFORNIA ECONOMIC AREAS, FALL 1962 TO FALL 1963

Area	Transitional Coefficients Fall to Fall					
	Grades 9-10		Grades 10-11		Grades 11-12	
	Ratio	Index	Ratio	Index	Ratio	Index
State Total	1.007	100	0.947	100	0.918	100
Standard Metropolitan Statistical Areas:						
San Francisco-Oakland	1.032	103	0.947	100	0.927	101
San Jose	1.012	101	0.976	103	0.955	104
Sacramento	0.997	99	0.946	100	0.939	102
Stockton	0.958	95	0.918	97	0.890	97
Fresno	0.931	92	0.918	97	0.901	98
Los Angeles-Long Beach	1.007	101	0.934	99	0.909	99
San Diego	0.978	97	0.939	99	0.917	100
San Bernardino-Riverside-Ontario	1.011	101	0.970	102	0.930	101
Bakersfield	0.940	93	0.927	98	0.888	97
Santa Barbara	0.997	100	0.974	103	0.915	100
Anaheim-Santa Ana-Garden Grove	1.055	105	1.015	107	0.958	104
Vallejo-Napa	0.980	97	0.990	105	0.947	103
Oxnard-Ventura	1.048	104	1.011	107	0.958	104
Salinas-Monterey	1.005	100	1.040	110	0.882	96
Non-Metropolitan Areas:						
Northern Coast	0.951	94	0.919	97	0.898	98
North Central Coast	1.018	101	0.988	104	0.953	104
South Central Coast	0.925	92	0.954	101	0.906	99
Sacramento Valley	0.941	93	0.894	94	0.908	99
North San Joaquin Valley	0.974	97	0.921	87	0.908	99
South San Joaquin Valley	0.937	93	0.894	94	0.894	97
Imperial Valley	0.956	95	0.934	99	0.885	96
Sierra	1.006	100	0.957	101	0.918	100

SOURCE: Based on reported enrollment by grade in: State of California, Department of Education, Enrollment in California Public Schools, October 31, 1962, Sacramento, 1963; and Ibid., October 31, 1963, Sacramento, 1964. Coefficients were verified from unpublished processing by: State of California, Department of Finance, Graded Enrollment Data, Sacramento, Aug. 1964 (courtesy of Mr. Joseph Freitas). Aggregation of county data into economic areas according to classification in text above.

Table 19

ACCESS RATES OF PUBLIC HIGH-SCHOOL GRADUATES (GRADE 12) TO PUBLIC INSTITUTIONS OF HIGHER EDUCATION (JUNIOR COLLEGES, CALIFORNIA STATE COLLEGES AND UNIVERSITY OF CALIFORNIA) BY CALIFORNIA ECONOMIC AREAS, 1965

Area	Access Rates to Higher Education in Fall 1965 of Graduates from Grade 12 in Summer 1965			
	Junior colleges, CSC and UC combined		CSC and UC only	
	Rate	Index	Rate	Index
State Total	0. 542	100	0. 096	100
Standard Metropolitan Statistical Areas:				
San Francisco-Oakland	0. 595	110	0. 133	138
San Jose	0. 585	108	0. 166	173
Sacramento	0. 467	86	0. 103	107
Stockton	0. 558	103	0. 062	65
Fresno	0. 601	111	0. 150	156
Los Angeles-Long Beach	0. 527	97	0. 111	116
San Diego	0. 573	106	0. 129	134
San Bernardino-Riverside-Ontario	0. 442	82	0. 069	72
Bakersfield	0. 551	102	0. 050	52
Santa Barbara	0. 575	106	0. 111	116
Anaheim-Santa Ana-Garden Grove	0. 574	106	0. 108	113
Vallejo-Napa	0. 545	101	0. 072	75
Oxnard-Ventura	0. 516	95	0. 070	73
Salinas-Monterey	0. 620	114	0. 062	65
Non-Metropolitan Areas:				
Northern Coast	0. 607	112	0. 146	152
North Central Coast	0. 464	89	0. 082	85
South Central Coast	0. 611	113	0. 067	70
Sacramento Valley	0. 546	101	0. 135	141
North San Joaquin Valley	0. 533	98	0. 069	72
South San Joaquin Valley	0. 569	105	0. 085	89
Imperial Valley	0. 547	101	0. 041	43
Sierra	0. 464	86	0. 087	91

SOURCE: Based on reported graduates from Grade 12 in: State of California, California Statistical Abstract 1967, Sacramento, 1967, p. 107. Coefficients derived from unpublished processing by State of California, Department of Finance, Graded Enrollment Data, Sacramento, Aug. 1964 (courtesy of Mr. Joseph Freitas). Aggregation of county data into economic area according to classification in text above.

of California system correlate with high income and educational levels, a pattern which is not clearly discernible when access to junior colleges is included.

Educational and Economic Characteristics. Table 20 summarizes data on the median number of years of school completed and median family income, derived from the 1960 census for economic areas. It is often stated in research literature that the economic factor (i. e., median family income) and the cultural factor (in this study only the median number of years of school completed was used, but other indicators could be compiled) have a major influence upon school retention. However, a comparison of the data in Table 18 and in Table 20 reveals a perplexing pattern. Metropolitan areas with higher levels of educational attainment and higher income levels also display higher rates of school dropouts. The evidence presented above is not conclusive (the entire test should probably be redone on the basis of 10-year averages), but it appears to suggest that an inverse relationship exists between high levels of schooling and personal income and the dropout rate. It also suggests that urban (metropolitan) school problems should be looked at in a different light from merely family income and, particularly, school expenditure (see below) points of view.

Educational expenses per student. Table 21 presents data on current educational expenses, graded enrollment and number of graduates from public schools for 1964-65. "Average daily attendance" is an artificial (in fact--phantom) statistical category--it differs slightly from reported enrollment (by 5 to 7 per cent), and all sorts of calculations performed in the financial accounts of the Department of Education using "ADA" figures might just as well be performed using the number of pupils actually enrolled. This is not the place to discuss the irrelevancies of "ADA" reporting. It is sufficient to state that calculations of the costs of education can be more concisely (and precisely) done on the basis of actual enrollment. These educational costs are a function of long-run periods. It takes 12 years of accumulated expenditures to produce a high-school graduate. Expenditures vary by grade level and school district. Also, price levels change from year to year, and therefore an adjustment to "constant prices" of school expenditures over the years must be made. To avoid these cumbersome problems (years of study by a staff of researchers would be needed to accomplish this task), the present report used a simplified approach. In examining area differences, school costs for one year were used as an indicator. In order to do so, only "current expenses" for education must be used.[20]

Table 22 presents data on per-student "current expenses" and per-graduate "current expenses." This gives an instantaneous picture as if over the years costs did not vary and as if all graduates were products of that year's educational outlay. To repeat, the data in Column 1 and Column 3 of Table 22 do not represent actual direct costs of education, but only hypothetical per-student and per-graduate costs. The use of "current expenses" on education is indicative of the actual costs of education, which if calculated would probably be about one-third to two-fifths higher than indicated current expenses per pupil or per graduate (Table 22).

According to the data in Table 22, per-student or per-graduate "current expenses" (assumed to be proportionate to total costs of education) indicate that in most metropolitan areas these are usually significantly higher than the state average. Higher per-pupil costs and per-graduate expenses are obviously correlated with higher levels of educational attainment and higher family incomes (Table 20). This is not surprising. However, if we review these data in Table 22 in conjunction with the dropout rates already mentioned (Table 18), it is evident that high per-student or per-graduate expenses are associated with high percentages of dropouts. If we review these data in conjunction with access to further post-secondary education (Table 19), it is further evident that the metropolitan areas have higher per pupil expenses associated with preparing students for further post-secondary education. All this raises the major policy issue: there is an urgent need in the State of California to devise some radically new criteria for differential financial support for education which would recognize the regional differences in the problems of metropolitan area schools.

Table 20

EDUCATIONAL (MEDIAN NUMBER OF YEARS OF SCHOOL COMPLETED) AND ECONOMIC (MEDIAN FAMILY INCOME) CHARACTERISTICS BY CALIFORNIA ECONOMIC AREAS, 1960

Area	Median number of years of school completed		Median family income	
	Median	Index	Dollars	Index
State Total	10. 7	100	6, 726	100
Standard Metropolitan Statistical Areas:				
San Francisco-Oakland	12. 3	115	7, 606	113
San Jose	12. 2	114	7, 843	117
Sacramento	11. 6	108	6, 973	104
Stockton	10. 0	93	6, 675	99
Fresno	10. 5	98	6, 488	96
Los Angeles-Long Beach	12. 1	113	7, 648	114
San Diego	12. 1	113	6, 969	104
San Bernardino-Riverside-Ontario	11. 9	111	6, 570	98
Bakersfield	10. 9	102	6, 471	96
Santa Barbara	12. 2	114	7, 257	108
Anaheim-Santa Ana-Garden Grove	12. 2	114	7, 628	113
Vallejo-Napa	11. 6	108	6, 744	100
Oxnard-Ventura	11. 6	108	6, 795	101
Salinas-Monterey	11. 9	112	6, 171	92
Non-Metropolitan Areas:				
Northern Coast	10. 8	101	6, 420	95
North Central Coast	11. 1	104	6, 472	96
South Central Coast	10. 9	102	6, 405	95
Sacramento Valley	11. 3	106	6, 085	91
North San Joaquin Valley	10. 1	94	5, 816	87
South San Joaquin Valley	9. 3	87	5, 680	85
Imperial Valley	9. 0	84	6, 409	95
Sierra	11. 3	106	6, 057	90

SOURCE: U. S. Department of Commerce, Bureau of the Census, United States Census of Population 1960: California, General Social and Economic Characteristics, PC (1) 6C, Washington, D. C.: U. S. Government Printing Office, 1962, Tables 83 and 86; and State of California, California Statistical Abstract 1967, Sacramento, 1967, p. 103.

Table 21

TOTAL CURRENT EXPENSE OF EDUCATION, ENROLLMENTS (GRADES 1-12) AND NUMBER OF HIGH-SCHOOL GRADUATES BY CALIFORNIA ECONOMIC AREAS, 1964-65

Area	Total current expense of education	Enrollment (Gr. 1-12) Oct. 1964	Graduates June 1965
State Total	$2, 029, 422, 000	3, 991, 900	226, 737
Standard Metropolitan Statistical Areas:			
San Francisco-Oakland	329, 877, 000	585, 700	34, 288
San Jose	86, 576, 000	221, 100	11, 496
Sacramento	91, 586, 000	183, 400	11, 567
Stockton	27, 638, 000	61, 400	3, 493
Fresno	47, 466, 000	104, 700	5, 338
Los Angeles-Long Beach	715, 416, 000	1, 344, 000	78, 229
San Diego	129, 528, 000	245, 200	15, 725
San Bernardino-Riverside-Ontario	119, 036, 000	234, 900	12, 633
Bakersfield	43, 584, 000	83, 500	4, 497
Santa Barbara	28, 111, 000	53, 900	2, 802
Anaheim-Santa Ana-Garden Grove	125, 255, 000	276, 000	14, 413
Vallejo-Napa	26, 259, 000	52, 000	3, 103
Oxnard-Monterey	36, 892, 000	74, 900	3, 781
Salinas-Monterey	24, 390, 000	49, 100	2, 420
Non-Metropolitan Areas:			
Northern Coast	21, 954, 000	46, 000	2, 760
North Central Coast	18, 862, 000	40, 700	2, 348
South Central Coast	22, 793, 000	45, 300	2, 698
Sacramento Valley	25, 965, 000	57, 100	3, 208
North San Joaquin Valley	32, 273, 000	71, 300	4, 064
South San Joaquin Valley	32, 629, 000	71, 600	3, 813
Imperial Valley	9, 007, 000	20, 600	914
Sierra	34, 685, 000	69, 500	4, 147

SOURCE: Expense--State of California, Annual Report of Financial Transactions concerning School Districts of California, Fiscal Year 1964-65, Sacramento, 1965, Table 3A, Table 3B and Table 3D, pp. 132-220. Enrollment--State of California, Department of Education, Enrollment in California Public Schools, October 31, 1964, Sacramento, Feb. 1965, pp. 8-10. Graduates--State of California, California Statistical Abstract 1967, p. 107.

Table 22

CURRENT EXPENSES PER PUPIL AND CURRENT EXPENSES PER GRADUATE (GRADE 12) BY CALIFORNIA ECONOMIC AREAS, 1964-65

Area	Current expenses per pupil		Current expenses per graduate	
	Dollars	Index	Dollars	Index
State Total	510	100	9,156	100
Standard Metropolitan Statistical Areas:				
San Francisco-Oakland	563	110	14,044	153
San Jose	392	77	7,531	82
Sacramento	499	98	7,918	87
Stockton	450	88	7,912	86
Fresno	453	89	8,892	97
Los Angeles-Long Beach	532	104	9,145	99
San Diego	528	104	8,237	90
San Bernardino-Riverside-Ontario	507	99	9,423	103
Bakersfield	522	102	9,692	106
Santa Barbara	521	102	10,032	110
Anaheim-Santa Ana-Garden Grove	454	89	8,690	95
Vallejo-Napa	505	99	8,462	92
Oxnard-Ventura	493	97	8,757	95
Salinas-Monterey	604	118	10,078	110
Non-Metropolitan Areas:				
Northern Coast	469	92	7,824	85
North Central Coast	463	91	8,033	88
South Central Coast	503	99	8,448	92
Sacramento Valley	453	89	8,094	88
North San Joaquin Valley	453	89	7,941	87
South San Joaquin Valley	456	89	8,558	94
Imperial Valley	437	86	9,854	108
Sierra	499	88	8,364	91

SOURCE: Computed from data in Table 21.

Retrospect

The State of California, in the decades to come, is faced with problems similar to those faced by the rest of the nation. However, because it is such a highly urbanized state, the severity of the problem in California is more pronounced. The range of these problems is succinctly summarized in the 1968 President's Message to Congress on Education as follows:

> Whatever else we expect of the local school, we demand that it prepare each student for a productive life. The high school graduate who does not enter college needs not only knowledge enough to be a responsible citizen, but skills enough to get and keep a good job.
>
> One and a half million young men and women will leave high school and enter the labor force this year--in a time of high employment, when skills are at a premium.
>
> Too many of them will find that they have no job skills--or only marginal skills, or skills which are not really needed in their communities.
>
> A high school diploma should not be a ticket to frustration.
>
> We must do more to improve vocational education programs. We must help high schools, vocational schools, technical institutes, and community colleges to modernize their programs, to experiment with new approaches to job training. Above all, we must build stronger links between the schools and their students, and local industries and employment services, so that education will have a direct relationship to the world the graduating student enters.
>
> I recommend that Congress enact the Partnership for Learning and Earning Act of 1968.
>
> The new program--streamlining and strengthening our vocational education laws--will:
>
>> Give new flexibility to our system of matching grants so the states can concentrate their funds where the need is greatest.
>>
>> Provide $15 million for special experimental programs to bridge the gap between education and work: for alliances between schools, employment services and private employers; for new summer training programs combining work and education.
>>
>> Totally revise and consolidate our existing vocations education laws, reducing paperwork for the states, the schools and other training centers.
>>
>> Encourage the states to plan a long-range strategy in vocational education.[21]

The issues are so pointedly stated in the message of the President of the United States, which calls for recognition of the fact that education and employment must be related. Many people, particularly those in the educational establishment, confuse education with formal schooling as an end in itself. The acquisition of knowledge, the development of productive skills, and the mastery of occupational tasks depend on many variables and many institutions. Public education, both in the nation and in the State of California, must be guided by and geared to the exogenous demand for its products--the educated people who are needed by society in the world of work. This calls for a cooperative effort on the part of the public schools with other agencies of the state and with private employers in order to develop better occupation-oriented education and more efficient means to synchronize education with tomorrow's manpower needs.

Footnotes

[1] See, for example: Battelle Memorial Institute, Manpower and Regional Economics Division, Socio-Economics Research Section, Final Report on the Michigan Manpower Study: An Analysis of the Characteristics of Michigan's Labor Force in the Next 15 Years, Columbus, Ohio, Nov. 1966; and U. S. Department of Labor, Bureau of Labor Statistics, Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections, Washington, D. C.: U. S. Government Printing Office, 1967. There are a number of adaptations of the latter national study to states and localities (Michigan, Ohio, Indiana, Colorado, New York, etc.) in developing matrices of occupational requirements with calculations made by computer.

[2] Nicholas DeWitt, "High Level Manpower and Development of Higher Education: Some Considerations for the Use of the Manpower Approach to the Study of Allocation of Resources for and Planning of Further Development of Higher Education in the State of California," a staff position paper prepared for the exclusive use of the Joint Committee on Higher Education, California Legislature, Feb. 15, 1967. Also, W. Lee Hansen and Burton A. Weisbrod, Benefits and Costs of Public Higher Education in California, A Report to the Joint Committee on Higher Education, California Legislature, Nov. 15, 1967, esp. p. V-2.

[3] The most eloquent general summary of problems is presented in: Eli Ginzberg, Manpower Agenda for America, New York: McGraw-Hill Book Co., 1968. In reference to work-skill orientation in public schools, see esp.: C. S. Benson and P. R. Lohnes, "Public Education and the Development of Work Skills," Harvard Educational Review, Vol. XXIX, No. 2 (Spring 1959), 137-150; and by the same authors, "Skill Requirements and Industrial Training in Durable Goods Manu-Facturing," Industrial and Labor Relations Review, Vol. 12, No. 4 (July 1959), 540-553. The only comprehensive national survey of occupational training needs can be found in: U. S. Department of Labor, Manpower Administration, Office of Manpower, Automation and Training, Formal Occupational Training of Adult Workers, Manpower/Automation Research Monograph No. 2, Washington, D. C.: U. S. Government Printing Office, 1964. An excellent interpretive summary of these data can be found in: Ann R. Miller, "Current Occupation and Past Training of Adult Workers," unpublished report prepared for the U. S. Bureau of the Budget, Sept. 1967 (mimeo.).

[4] President's Message to Congress on Employment (New York Times, Jan. 24, 1968) and President's Message to Congress on Education (New York Times, Feb. 6, 1968).

[5] U. S. Department of Commerce, Bureau of the Census, "Projections of the Population of the United States, by Age, Sex, and Color to 1990, with Extensions of Population by Age and Sex to 2015," Population Estimates, Current Population Reports, Series P-25, No. 381, Washington, D. C.: U. S. Government Printing Office, December 18, 1967.

[6] U. S. Department of Commerce, Bureau of the Census, United States Census of Population 1960: California, General Social and Economic Characteristics, Final Report PC(1)-6C, Washington, D. C.: U. S. Government Printing Office, March 1962, Table 39, p. 6-232.

[7] Note: The transition ratios were calculated for graded enrollment only from: State of California, Department of Education, Enrollment in California Public Schools, Fall 1966, Sacramento, 1967, and similar reporting for earlier years. In addition, the ungraded system, namely for physically handicapped, mentally retarded and special classes, accounted for between 50,000 and 70,000 pupils annually in California public schools.

[8] The ratios of first-year acceptances to high-school graduates are from unpublished tabulations of the California Department of Finance, Revenue and Management Agency (Demographic Division, courtesy of Mr. Joseph Freitas). Actual statistics may be found in the annual reports of the California state colleges and the University of California. Further data are available in: State of California, California Statistical Abstract 1967, Sacramento, 1967, pp. 108-109; and State of California, Department of Finance, Projections of Enrollment for California's Institutions of Higher Education, 1960-1975, Sacramento, October 1960, passim.

[9] State of California, Department of Education, Annual Descriptive Report for Vocational Education in California (1965-66), Sacramento, n. d. (mimeo.). Similar mimeographed reports are available for other years. Current information on manpower training and retraining (particularly under federal support auspices) is reported in: State of California, California Manpower Coordinating Committee, Cooperative Area Manpower Planning System, The California Cooperative Manpower Plan for Fiscal Year 1968, June 27, 1967.

[10] In their studies researchers utilize standard techniques based upon the calculations and analysis of "matrices." A matrix is simply a table arranged in checkerboard form, in which one set of column headings (variables or parameters) is listed along the top of the table and another set of row headings (variables or parameters) is listed on the side of the table. Thus, every entry (value or magnitude) is listed in two ways, associating it with either column or row (respective variables or parameters). The Bureau of Labor Statistics matrices by occupation already assume existing production relationships between industries and the distribution of employment in each major industry sector by major (and/or detailed) occupation. The industry-occupation matrix thus takes into account actual (and/or projected) input-output relationships and levels of economic activity. The education-occupation matrix thus takes into account actual (and/or projected) relationships of educational attainment by occupation. The technique employed in this study is the so-called "Method B" of projection employed by the Bureau of Labor Statistics (see details in: U. S. Department of Labor, Bureau of Labor Statistics, Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections, Washington, D. C.: U. S. Government Printing Office, 1967 (mimeo.), pp. 704-709), which is as follows:

1. California state occupation-industry and occupation-educational attainment matrix is developed (Table 12).
2. U. S. national occupation-educational attainment trend factors (Table 11) are computed for each cell by dividing the projected (1975) occupation-educational attainment ratio by its corresponding (1960) occupational-educational attainment ratio. Note that for educational attainment, 1959 to 1966 trend ratios (Table 13 and Table 14) were used.
3. The projected (1975) state matrix is computed by applying the derived national occupation-educational attainment trend factors to the corresponding state cell of the base period (Table 12).
4. This procedure is repeated for each occupation-educational attainment cell, and the totals are forced on a pro-rated basis to 100 per cent distribution.
5. Individual cell estimates are then aggregated for occupations and levels of educational attainment.

[11] W. Lee Hansen and Burton A. Weisbrod, Benefits and Costs of Public Higher Education in California, A Report to the Joint Committee on Higher Education, California State Legislature, Nov. 15, 1967, p. V-2.

[12] National Planning Association, Center for Economic Projections, Regional Economic Projections Series: State Population, Labor Force and Net Migration Trends to 1976, Report No. 3, Washington, D. C., Nov. 1963 (mimeo.), p. 95. See similar data in: National Planning Association, Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, Washington, D. C., 1962, esp. pp. 42, 45-46. Statements in the text were derived on the basis of data from 1950 and 1960 Censuses of Population and labor force participation rates.

[13] U. S. Department of Commerce, Bureau of the Census, 1960 Census of population, Classified Index of Occupations and Industries, Washington, D. C.: U. S. Government printing office, 1960, passim.

[14] State of California, Department of Employment, Department of Industrial Relations, Estimated Civilian Employment, Unemployment, and Labor Force, California 1940-1966, January 1967. This (and similar type) reporting of employment by industry sectors devoid of occupational information is of limited use, however, for projecting training requirements. For purposes of unemployment compensation or welfare benefits, the compilations of data by the California Department of Employment serve useful purposes, but for purposes of manpower planning (especially relating it to education), their statistical-gathering activities leave much to be desired.

[15] U. S. Department of Labor, Bureau of Labor Statistics, Tomorrow's Manpower Needs: National Manpower Projections and a Guide to Their Use as a Tool in Developing State and Area Manpower Projections, Washington, D. C.: U. S. Government Printing Office, 1967. See also: U. S. Department of Labor, Manpower Report of the President and a Report on Manpower Requirements, Resources, Utilization and Training, transmitted to Congress in the respective years--1963, 1964, 1965, 1966, and 1967.

[16] State of California, State and Local Fiscal Relationships in Public Education in California, Report of the Senate Fact Finding Committee on Revenue and Taxation, prepared by Charles S. Benson et al., Sacramento: Senate of the State of California, March, 1965, passim, esp. p. 25.

[17] California Education Code (1963 edition), Article Section No. 17300.

[18] Tabulation adapted from: State of California, Department of Finance, Financial and Population Research Section, Preliminary Projections of California Area and Counties to 1985, Special Report, Sacramento, April 20, 1967, pp. 44-45. This source also presents convenient California economic area map.

[19] Photostats of "raw data" tabulated by county are available upon request from the author or by writing to Professor Charles S. Benson, School of Education, University of California, Berkeley, California.

[20] According to the annual reports of Financial Transactions of California School Districts, "current expense of education" includes: administration, salaries of teachers and other personnel, sur-charges on salaries, health services, transportation, operation of plant, maintenance of plant, fixed charges. "Current expense" excludes food service, community service, capital outlays, building loan payments, debt service charges, tuition and other transfers. The categories thus included in "current expense" are largely those of the direct costs of education. If the real resource costs were to be estimated, loan payments and debt service charges should have been included, together with private costs of education and income foregone by students. The aggregation of totals for elementary school districts, high-school districts and unified school districts was derived for the "current expense" category for each county and subsequently summed up by economic area.

[21] New York Times, Feb. 6, 1968, p. 26.

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The footnotes and source references cited above represent a small proportion of the materials consulted. Mimeographed copies of the complete bibliography used in this study may be obtained upon request from:

Professor Nicholas DeWitt, Director
International Survey of Educational
Development and Planning
Indiana University
Ballantine Hall 465-466
Bloomington, Indiana 47401

or

Professor Charles S. Benson
Division of Educational Administration
Department of Education
University of California
Berkeley, California 94720

APPENDIX E

POSSIBLE CONTRIBUTIONS OF PROGRAM BUDGETS AND COST-BENEFIT ANALYSES TO CALIFORNIA SCHOOL SYSTEM MANAGEMENT

Consultants' Report Prepared
for the
State Committee on Public Education

by: John E. Keller
Burton I. Wolfman
Pauline Fong
Lewis Perl

University of California
Berkeley

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APPENDIX E

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APPENDIX E

POSSIBLE CONTRIBUTIONS OF PROGRAM BUDGETS AND COST-BENEFIT ANALYSES TO CALIFORNIA SCHOOL SYSTEM MANAGEMENT

Introduction

School administrators at all levels--principals, district superintendents, and senior Department of Education officials--are managers in the classical sense. That is, they are responsible for specialized sets of physical resources which by their effective operation are intended to achieve specified goals or objectives. Now, it can be argued that the central function of management is the task of efficient resource allocation. Obviously, managers are concerned with other questions such as personnel selection and training, organization, communication, etc.; but these are of importance only insofar as they aid or hinder the manager in his ability to carry out his essential function of making good choices about allocating the limited resources at his disposal so as to maximize achievement of the goals set for his organization. In one important sense, then, school system managers, like academic, industrial, governmental, and military managers are economic choice makers.

Of course, managers at different levels in an organization face different numbers and kinds of constraints on the choices open to them, the nature of their problems varies somewhat (with a greater proportion of operational-type problems facing managers at the lower echelons in an organization), and the time horizons are appreciably different. But all of them follow (or should!) essentially the same process in performing their resource allocation function: they make long-range plans, they devise programs and alternative programs to carry out these long-range plans, they assess the relative costs and benefits of the alternative programs and using some appropriate criterion choose a preferred one, and finally, the immediate fiscal implications of the preferred alternative have to be converted into a budget.

The reasons for emphasizing the necessity of allocating resources efficiently can be stated in many ways: "be economical," "don't waste the taxpayers' dollars," etc. A quite legitimate and perhaps more appealing and illuminating way to consider the matter is in terms of "opportunity costs." The school administrator in common with all other managers has a quite finite, a constrained, set of resources (physical or fiscal) at his disposal. He also faces a virtually unlimited demand on these resources. He or his subordinates always want to accomplish more of what they are now doing, or they want to do the current tasks qualitatively better, or they would like to undertake activities or reach goals not yet attempted. In this context a poor resource allocation decision (say, one in which a poor choice among alternatives results in more resources being awarded to the accomplishment of an objective than would have been the case if a better alternative had been selected) simply means the manager has denied himself the ability to achieve some of the very goals or benefits in which he is most interested. He has foregone certain benefits that he would have liked to have, simply because the resources needed were absorbed by his earlier poor choice. And frequently the value of the foregone benefits is greater than that of the "wasted" or "excess" dollars committed to the poor alternative.

Another way of putting it is to say that the decision to spend resources (or their dollar equivalents) on a particular activity is equally a decision not to spend them on all of the other possibilities open to the manager. If the value or benefits which could have been realized in the next best use of those resources is greater than that actually realized, then indeed, a poor or inefficient resource allocation decision has been made.

In the real world of incomplete facts, uncertainties, and compelling time pressures it is all too easy to make poor choices. These natural difficulties are multiplied for managers in the public sector because they lack many of the tools and institutional aids available to their managerial counterparts in the private sector. There are no profit and loss statements, competition to drive out the poor performers and provide incentives to the good ones is absent, systems of externally determined prices for some inputs and almost all outputs are lacking, outputs or benefits frequently cannot be quantified at all--and even when they can be, seldom can the benefits and costs be measured in the same way.

For the private manager, of course, resources consumed and outputs generated can both be translated into their dollar equivalents (cost and revenues) and decisions on whether and by how much to expand the scale of activity in a particular program can be based on the decision rule from micro-economics that maximum profit occurs when marginal costs just equal marginal revenues.

The public sector manager, on the other hand, frequently finds himself in the position of not having any kind of clear-cut decision rule which can tell him whether he should do more or less in an existing program.

Nevertheless, in the last ten years there has been much progress by economists, management specialists, operations analysts, and mathematicians in creating and applying tools to aid managers, both public and private; in fact, it might be fair to say that over the last decade there has been a management revolution. Two of the pioneers in these developments have been the aerospace industries and the Department of Defense; but across a wide spectrum of American industry and government these techniques have come to be appreciated and used. In fact, a recent bestseller in France (Le Americain Defi, by Jean Jacques Servan-Schreiber, editor of L'Express) argues that America's increasing domination of Europe's high technology industries is due not to our wealth or technology, per se, but to the vastly superior organizational and managerial skills the U.S. companies command.

What promise do these new managerial techniques--of which program budgets and cost-benefit analyses are principal components--hold out for public sector officials generally, and for school system administrators in particular? Wisely and consistently used, management techniques such as program budgets and cost-benefit analyses lead to a marked increase in the sophistication and discernment with which school administrators perform their resource allocation tasks, thus leading to a higher proportion of good or better choices. (Note that neither optimality in individual cases of choice making, nor consistency in choosing well is promised.)

The net effect of this improved managerial performance, however, will be a significantly greater realization of the goals school administrators are interested in achieving within whatever resources are made available, as well as an increased ability to argue forcefully and validly for greater overall public investment in educational activities of high pay-off.

Is it realistic to expect that an enterprise such as the California state school system--which is so remote conceptually from the Department of Defense or an aerospace manufacturer--can adopt these techniques and realize the promised improvements?

An answer to this question must remain speculative and inconclusive for some time since the body of experience upon which to make a judgment is small.

Nevertheless, the available evidence is encouraging. Federal agencies quite different in mission from the Defense Department (the Department of Health, Education, and Welfare, for example) have successfully made the transition to these management techniques; cities such as San Diego and New York are in various stages of implementing program budgets and performing cost-benefit analyses in making their resource allocation choices; primary and secondary school systems in progressive localities, particularly in Pennsylvania, are already using adaptations of these Defense-developed techniques and are engaged in substantial research projects to enlarge the area of applications; states, such as Hawaii, which have a single statewide primary and secondary school system are committed to the principles involved and are conducting pilot studies; and a number of institutions of higher education (where perhaps the problems of implementation are even more severe) have made successful beginnings in using some or all of the new management techniques. The University of Hawaii, Ohio State, the University of Toronto, the University of Colorado, Tulane, and the University of California, to name but a few, have all made significant progress in this direction.

At the University of California, for example, The Regents' Budget document, which already had a largely programmatic orientation, continues to evolve in the direction of a more strictly defined program budget; the budget has been put on a 10-year projection basis so that the long-term resource consequences of program choices are more adequately revealed, capital outlay budgets are being integrated with operating budget (again so as to display more completely the total resource implications of management's choices), and special tools such as computer-based long range fiscal plan models and detailed cost simulation models are in use to help decision-makers evaluate the physical resource and fiscal implications of the various options open to them. In addition, cost analyses and cost-benefit analyses (in many cases using formal, computer-based models or simulations) have been performed on problems such as student flows, optimum class scheduling, price elasticities of demand for higher education by socio-economic groups, efficiency of graduate education, financing of capital outlays and scholarships, year round operation, and on the question of whether to expand existing facilities or to construct new ones. Models are under development, or are planned, for making better long-range enrollment forecasts, for allocating the total enrollment demand more equitably among the campuses, for estimating faculty flows into and out of the University, for preparing bond financing schedules, for managing cash flows, and for choosing sites for new campuses if further expansion is to occur.

While only a relatively small fraction of the analytic menu mentioned above constitutes completed formal program budgeting or cost-benefit analysis, it does constitute some hard evidence on the applicability of these new management techniques. It might be well to point out in this connection the fact that it took between four and six years for the new management systems to reach maturity with the Defense establishment; and this was with the advantage of several uniquely favorable circumstances. There was a highly disciplined bureaucracy already conditioned to a large measure of quantitative analysis; Secretary McNamara was an administrator of exceptional capabilities who had full power to enforce the new methods in which he personally believed; a large body of analysts fully familiar with the techniques to be employed was available; and 15 years of intellectual effort in defense-related research organizations had already been devoted to analysis of both the form and substance of the problems involved.

Few if any of these advantages are present in the California school system at this time; thus to expect similarly dramatic results in anything less than a decade would be unwarrantedly optimistic. Nevertheless, a beginning should and can be made. The available evidence is encouraging and the testimony of experienced analysts in the field, both private and public, all indicates that a very substantial pay-off can be achieved through the application of techniques such as program budgets and cost-benefit analysis.

Program Budgets - Their Characteristics and Uses

A general definition of a program budget might be the following: A program budget is a presentation technique or format for displaying information about the outputs and resource costs of activities (or programs) within an organization. It facilitates a kind of "eyeball analysis" and decision-making by managers and considerably aids more formal analysis of the cost-benefit variety.

Before going on to discuss the characteristics of a program budget, it might be well to define more explicitly a program (or more narrowly, a program element). A program in this sense is a unique combination of specialized personnel, facilities, equipment, and supplies, which when operating together in an integrated fashion produces a good or service which moves the overall organization toward accomplishment of its objectives.

The outstanding characteristic of a program budget as distinguished from a traditional line-item, object of expenditure budget is that it is focused on and built upon the organization's output-producing activities. A program budget is concerned with objectives and the activities or programs whose outputs accomplish those objectives: it attempts to organize the formal budget document in terms of these integrated activities or programs.

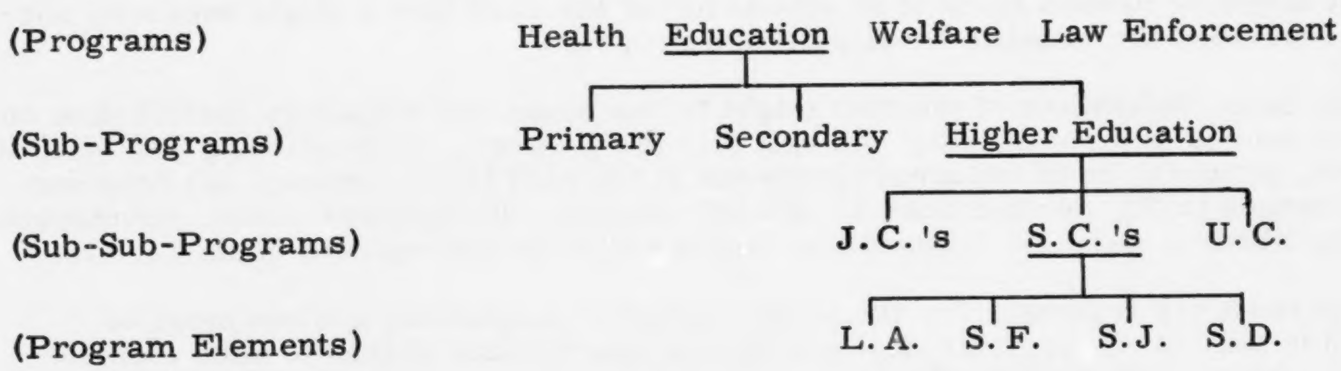
Secondly, a program budget arranges these program elements in some hierarchical order and groups them by related purposes. The groupings need not follow existing organizational lines, but are arranged so as to bring competing or substitutable activities, whatever their organizational location, into the same group; in this way planning and analysis are facilitated. Exactly what groupings and what levels of detail are shown is partly arbitrary and is generally arranged to be of maximum usefulness from the viewpoint of the decision-maker for whom the program budget is intended.

A State of California program budget, for example, could be divided into several major programs some of which might be Transportation, Health, Education, and Welfare, and Law Enforcement. Each of these programs can be divided into two or more sub-programs.

For example, the Education program may be divided into Primary, Secondary, and Higher Education. Each sub-program can then be divided into two or more program elements (i.e., the activities within the major program which represent a special aggregation of resources required to further the objectives of the major program).

To illustrate further the Education program in a statewide budget, the program elements within Higher Education might be Junior Colleges, State Colleges, and the University. Or , if it is deemed desirable, Junior Colleges, State Colleges, and the University may be classified as sub-sub-programs, and then each divided into program elements such as campuses. This process can be illustrated as follows:

STATE BUDGET



Obviously, what constitutes a program element depends to a large extent on the viewpoint of the decision maker. To the Governor, whole campuses could easily represent program elements; to a departmental chairman, individual courses may be considered program elements. Program budgets should be structured, therefore, to meet the planning and analysis needs of the principal decision maker to each major organizational level; e.g., Governor, University President, Campus Chancellor.

A third characteristic of a program budget is that it attempts to develop quantified measures of output for programs or program elements. That is, it attempts to indicate quite specifically the degree to which the particular program is helping to accomplish the goals of the overall organization. These outputs or benefits are measured, of course, at a particular level of activity within the program elements.

Fourthly, at that same level of activity the program budget displays (in some standard set of cost categories) the total resource implications of each program and program element.

A fifth characteristic is that a program budget projects the benefit and cost indicators of each program (at its planned levels of activity) year-by-year for some distance into the future. In this way hidden "downstream" fiscal disasters can be averted and a sound basis achieved for making long range trade-offs between capital and operating costs.

Finally, a program budget serves as the link or mechanism for relating substantive (education, in this case) planning and fiscal planning. In the light of some analysis relating marginal costs and benefits, it is decisions about programs and objectives which should determine budgets--and not vice versa as is sometimes the case.

The advantages of a program budget lie in the fact that it is structured in the same terms that managers use in thinking about their problems; it displays both costs and benefits for the existing array of activities at the current level of activity (the beginnings at least of a form of input-output analysis); and it naturally generates those data which are essential for more sophisticated analysis of the cost-benefit kind.

There are, however, substantial problems in developing an operational program budget. The data requirements are both massive and complex and it is probably safe to say that a well-articulated program budget for a large organization would be a practical impossibility without electronic computer assistance.

For example, in the California state school system there may be anywhere from several hundred to several thousand program elements. Each would have to be identified as well as all of the physical resources assigned to it. There might be perhaps a half-dozen indicators of the level of activity within a program element (A.D.A., class size, books read, tests completed, etc.) and perhaps another half-dozen indicators of output might be needed since it is almost never the case that a single measure adequately describes the benefits or outputs of a program.

In this case, indicators of interest might be the mean and frequency distribution on pupil test scores at point of entry and exit into the program, proportions going on to the next level, proportions of failures/successes at the next level, truancy and drop-out rates, changes in IQ, performance in related courses, disciplinary cases, spontaneous use of the library, parental cooperation expressed in teacher-parent contacts, etc.

On the resource tracing side, the program budget accounting system must be prepared to take every variable cost and assign appropriate shares to each element program. This involves not only a very difficult problem of internal cost allocation, but a complex problem of categorizing each expenditure (or part of an expenditure transaction) by program element, by object of expenditure (cost category) by organization, by function, and by fund source.

It is obvious from the above enumeration that a practically successful program budget for the California state school system will require not only some imaginative conceptualization but a truly sophisticated and massive management data system. Fortunately, a substantial portion of the work needed on such a system has been accomplished in the State Department of Education under the leadership of Dr. Alvin Grossman.

The following section of this report describes in greater detail the conceptual basis of his approach, the accomplishments thus far, and the potentialities in the near future.

The California State Department of Education early in its development of automatic data processing recognized that the complexities of the State's educational programs and organization would require increasing capabilities to obtain and to process large quantities of essential but diverse information. In 1959 the State Department of Education in conjunction with the Cooperative Research Branch of the U.S. Office of Education began the research and development efforts needed to bring computer data processing systems into California educational management.

Among the first conclusions reached by this early research effort was that effective educational management would require a total educational information system. The years since 1959 have been productively devoted to experimentation and the conceptualization and organization of such a system. While at the present time the goal of a total educational information system has not been fully achieved, the most critical initial developmental work has been completed and the eventual organizational structure for an operational information system has gained the support of California school administrators. The developing California Educational Information System is designed to include the areas of pupil services, business services, personnel-payroll, and instructional materials and equipment.

At the present time the pupil services sub-systems are totally operational, the business services and personnel-payroll systems have been designed and are nearing completion for the implementation, and initial systems analysis, the necessary first step in the development of a program budget and related accounting system, has been completed.

In understanding and evaluating the California Educational Information System considerable credit must be given to Dr. Alvin Grossman, Chief of the Bureau of Systems and Data Processing for the State Department of Education. It was through Dr. Grossman's initiative and leadership that developmental efforts were begun in 1959. Starting with an area of information collection with which most local school administrators were familiar, pupil services (e.g., grade reporting, test scoring and reporting, pupil scheduling and attendance reporting) Dr. Grossman's group began a number of pilot projects to demonstrate to school administrators the effectiveness of automatic data processing systems. It soon became apparent, however, that the variability in size and financial resources of California local school districts would preclude many from utilizing any reasonable level of data processing technology or data collection and control procedures. However, size of the State of California and the autonomy of local school districts would not permit the State Department of Education to undertake a centralized processing and data control system. The development of a total educational information system would essentially have to be a decentralized system which would, from the outset, require that considerable efforts be devoted to initial planning to insure comprehensiveness, compatibility, and uniformity of data collection on a cooperative basis.

It is in this area that the early interest and initiative of Dr. Grossman and the State Department is most significant. It is highly probable that if some seven years of research and development on how to develop an integrated information system were not already available to large school districts, many of them would be moving unilaterally to create their own uncoordinated information systems.

Organizationally the educational information system will be based upon the coordinated efforts of the local school districts, regional data processing and information centers, and the Bureau of Systems and Data Processing in the State Department of Education. A total of 15 regional processing centers are envisioned. At this time ten are operational. Small school districts (districts with enrollments under 10, 000) will obtain all of their processing and analysis services from their regional center. Medium sized districts (10, 000 to 30, 000 enrollments) might have partial processing installations such as keypunching or card sorters, but would rely on the regional centers for more sophisticated data processing and analysis. Large districts that can afford to maintain data processing equipment and staff would have their own installations, but would find that the staff and analytical experience of the regional centers to be of benefit in many operations.

Following the principle of management by exception the regular service packages of the regional centers will routinely produce a number of analytical reports each designed to service different levels of local school administration. These routine reports can be grouped in four general categories: regularly scheduled reports such as report cards, attendance lists, and test scores; special exception reports which will report to a designated school manager when some specified variable has exceeded predetermined limits; detailed probe reports which would abstract total files of relevant related information as specified; and planning reports which provide historical time series data and projections.

For all the participants in the program to have access to the basic data and to be able to convert large quantities of data into usable management information it is necessary to structure the files such that the information "bits" are independent of the file structure or operational mode. Thus, the system must provide random access to all participants in such a manner that the users can obtain correct information for analytical purposes without violating the confidentiality of local users. Key to the operation of such a system is a data control system which audits, edits, and controls the input of data. Such a system is currently under development.

The established pupil services processing system provides a rapid updating and reporting method for testing, attendance, grade and credit reporting, and recording in a permanent record for local school districts. The system utilizes a comprehensive student master file to which additions, deletions, and changes may be made for any student's record. Each student's master file generally will provide some family background characteristics which can be used in subsequent analyses. In a reasonably short period of time when this file has accumulated a few years of historical data, a host of analytical studies can be undertaken to illuminate the education production function and to identify factors which predict student success or failure.

The developing business service system provides for data control, validation of entries, accounts payable, personnel transactions, financial accounting, and inventory controls. Provision has been made within the system to account for funds by object, function, program (both state mandated or local option), fund source and organization. Thus, the business service system will eventually permit the analysis of program elements, resource inputs, levels of activity and, when related to other files, measure the relationship of financial resource inputs to outputs.

The personnel-payroll system which uses the employees' social security number to key to an employee master card can identify a variety of personnel characteristics and establish inventories of skills. For example, the system can report to local school administrators the age and length of service of all certificated personnel by individual grades being taught, or within the total district it can associate turnover rates with a variety of other characteristics and can identify talent losses (or gains) resulting from terminations.

High on the priority list of new systems to be developed and made operational over the next three years is the Budget Simulator; this will be related to and used in conjunction with the program budget accounting structure. When completed, the Budget Simulator will provide educational managers with an indispensable analytical tool; it will rapidly translate postulated changes in population, tax rates, programs, etc., into information needed for decision making; school districts will be able to forecast from one to five years of expenditures and income on a year-by-year basis.

Income and program expenditures forecasting will be designed as separate systems. Local school districts derive their revenues from a variety of sources: local tax assessments and special taxes, apportionments, and federal grants and contracts. The number of potential exceptions and variable income rates (average daily attendance calculations) make it difficult for local school managers to develop manually very sophisticated or very many alternative income forecasts. A revenue simulator will enable districts to input sets of variables such as tax rates, tax bases, apportionment rates and population forecasts to calculate as many alternative revenue projections as are required for decision making.

An expenditure simulator will be designed to supplement a program budget layout keyed to the educational objectives of the several major activities of the school district. The district budgets can be developed initially by aggregating the resource requirement of each program rather than initially constraining programs to conform to expected revenue levels. Through an interaction between the revenue simulator and the expenditure simulator the administrators of the district can weigh the costs and the benefits of alternative mixes of resources.

To realize the full potential of the work invested in the Educational Information System will require at least three more years of sustained research and development and financial support. The existing conceptual work done on the project is sound and innovative. The experience and expertise developed by Dr. Grossman and his project personnel are truly scarce commodities; they merit further support. The success of this educational information system could very well determine the future effectiveness of educational management at all levels of the California school system.

While Dr. Grossman has anticipated the management benefits of program budgeting and has incorporated into the initial planning of the information system the flexibility to service a program budget, the information system cannot realize its full potential unless and until the key educational decision makers and analysts have actually structured and defined the programs and objectives of the system.

The problem of defining and identifying all of the programs, sub-programs, and program elements in the California state school system is beyond the scope and competence of this report: it would require the efforts of a highly qualified group over a period of probably several months to complete satisfactorily such a task and it appears that such a commission has been chartered. Nevertheless, it may be useful at this point to suggest some possible criteria and to give some illustrations of objectives, major programs related to them, and of competing program elements within a major program.

The major objectives of the secondary school system can be broadly conceived of in three ways: (1) to prepare students of varying intellectual abilities for successful college careers in a spectrum of institutions appropriate to their native capabilities; (2) to prepare those not going on to college for economically rewarding vocational careers; and (3) for both groups, a sense of social and intellectual values which will enable them to function as responsible citizens. Obviously. these statements of general objectives have an air of "God, motherhood, and country" about them that is, perhaps, emotionally satisfying, but analytically empty. What is needed is a series of more operational statements equivalent to the grander but less useful ones--and with some fair degree of quantification introduced.

For example, the first part of the objective stated above would have to be defined operationally in terms of what success in a spectrum of appropriate institutions meant for students of varying ability. Clearly, some distinctions as to students' possession of factual information by subject matter area would have to be made (grades in high school, STEP, SCAT, and CEEB scores), some measure of scholarly attitudes would have to be introduced (CEEB scores, writing and science fair prizes) and some indication of achievement in extra-curricular activities (athletic, journalistic, art, drama, and student government awards). Several of these aspects might, of course, be subsumed in indicators such as proportions of National Merit, Woodrow Wilson, and other scholarship winners.

All of these measures would have to be made both in the secondary school system and, subsequently, in the college environment--and perhaps even beyond. Distinctions would have to be made among students by broad socio-economic intelligence groups; similarly, student performance would have to be measured in colleges which themselves were grouped broadly by academic standards. Thus, the objectives of the secondary school system, with respect to college-bound students, would be spelled out in terms of a series of quantifiable indicators grouped in a matrix of types of students and types of colleges. Furthermore, using some analysis, some comparative data, lots of judgment, and a dash of intuition, specific quantitative norms would have to be postulated for each indicator in each cell of the matrix. As experience and further analysis indicates, these would have to be modified; but some measurable norms of performance must be applied--at least provisionally.

For the non-college-bound student, similar distinctions must be made in terms of student characteristics and, then, operational and quantitative specifications developed which are proxies for "economically rewarding vocational careers." In this case, measures such as first-offered wage, cumulative first five-year earnings, unemployment rate, rate of job change, rate of vocation change, number returning to school, attitudinal measures of job satisfaction, proportions reaching supervisory status, etc., could all be utilized.

Quantified operational re-statements of the "responsible citizenship" objective might involve measures of voting frequency, election to public office, leadership or membership in civic and charitable organizations, arrest records, etc.

The above discussion of the objectives of the secondary school systems gives some idea of the variety of measures which must be used as proxies for the generally stated goals, it suggests the general structure of the programs needed to achieve these goals, and it introduces the notion that the entire educational process from kindergarten through post-doctoral fellow is an integrated system whose effectiveness is measured by the "value added" at each subsequent stage to groups of students categorized by the cultural, economic, and intellectual endowments they initially bring to the school system. In this case, if some absolute standard of ultimate performance of completed students is specified, then each stage in the "production process" (primary, secondary, and higher education) must add its share to the value added; a shortfall in any segment simply means that a subsequent stage in the process must invest additional resources in order to make good the deficiency. In this context, efficiency can be defined as the "educational value added" divided by the resources expended to produce that increment in education.

At the primary school level, the problem of defining operational objectives is somewhat simpler. Almost without exception the outputs of the primary school system are students qualified to pursue successfully a high school curriculum. Again, however, distinctions must be made among possession of factual knowledge by subject field, scholarly attitudes, and extra-curricular achievement. Further, recognition must be given to the kinds of high schools and their varying standards to which students go, and to the social, economic and intellectual characteristics of the students as they enter the school system. In this context, sub-objectives may be stated in terms of ensuring that some specified proportions (e.g., 95 percent) of the students (of a particular group) reach academic achievement levels in a particular subject matter area such that they can successfully begin the work in the next higher grade. (Throughout these statements of sub-objectives related to internal comparisons and progress it may be useful to introduce criteria based on more objective standards such as national achievement norms rather than purely relative ones.)

Given these objectives, a primary school program budget would identify those programs or program elements aimed at meeting the objectives. For example, if the objective were to ensure that 95 percent of all entering 7th grade students of average intelligence (i.e., 90-110 IQ) were to acquire factual knowledge and scientific attitudes adequate for beginning 8th grade work in physical science (as measured by a standardized science achievement test), then the school administrator could array all of those possible program elements which could meet that objective. In this case, there might be a considerable variety of these unique combinations of resources which by their integrated action tended to achieve the specified objective.

For example, a basic distinction in programs might be made between those that emphasize a theoretical development of the subject and those that rely on the case method. Under these broad headings, individual program elements teaching 7th grade physical science could be organized based, in effect, on different pedagogical technologies: individual teacher-class programs, team teaching, computer-aided learning, and a program featuring closed circuit TV. Each of these programs (or program elements) would have quite different mixes of resources (teachers, equipment, books, classrooms and laboratories, etc.) and would require different amounts of these resources to reach the specified level of effectiveness or achievement. These differences in amounts and kinds of resources for equal effectiveness would reflect themselves in different costs for the program elements--different not only in absolute amounts in the next budget year, but having different totals over time and with different patterns for the time stream of costs.

All of these factors would be of interest to the school administrator in making a choice among the competing program elements. We would hope he would utilize some of the techniques of cost-benefit analysis in making that choice, and the following section of this report describes and illustrates these techniques in a more detailed fashion.

Cost-Benefit Analysis: Its Characteristics, Procedures, and Uses

Program budgets (and their supporting management data systems) provide facts upon which to make a decision; cost-benefit analysis provides attitudes and techniques which help the decision maker make better choices, given those facts.

Generally defined, cost-benefit analysis is both an attitude and a set of formal analytic techniques which attempt to relate the cost and benefits of competing programs in a rigorous quantitative fashion so that decisions can be made about preferred courses of action.

As indicated above, cost-benefit analysis is not a discipline or subject matter area in itself, but, rather, it is an eclectic collection of concepts, tools, and techniques. These have been drawn from mathematics, philosophy, the physical sciences, and from economics. Fundamental to this mode of analysis from both a conceptual and a procedural standpoint is a kind of Socractic inquiry concerning ends and means. It is essential in analysis of this kind to be very clear about what the real objectives are and how they relate to the larger hierarchy of objectives of the total organization. An error certain to introduce a fatal flaw in any cost-benefit analysis would be to misconceive the objective at issue.

A second important component of the technique of cost-benefit analysis draws on the methodology of modern science. It emphasizes attributes such as the use of empirical data, quantification, explicit assumptions, logical rigor, mathematical model building, and prediction and verification. To the current generation of physicists or engineers, it may seem trite to endorse these qualities since they have become so much a part of their professional approach. But, unfortunately, analysis in support of management decision making is still plagued by the use of a priori speculation rather than hard facts, by widespread use of non-refutable hypotheses, by covert assumptions, by lapses in logic, and by single point estimates for critical variables with no way to estimate the effect of changes over a reasonable range.

The third and most directly influential contributor to cost-benefit analysis is the discipline of economics--particularly micro-economics. The theory of the firm, price theory, capital investment theory, marginal analysis, spill-over effects, trade-offs, opportunity costs, sunk costs, present value discounting, sensitivity analysis, and the notion of the production function are all economic concepts of key importance to cost-benefit analysis. (A number of these concepts are defined for the non-economist reader in an appendix to this report.)

Clearly, however, while school administrators need not become professional economists, it is most important that they be reasonably familiar with these concepts. Seriously poor choices can be made, for example, by basing decisions on average costs rather than marginal costs--or by ignoring the opportunity costs of resources, or by treating depreciation schedules as if they were experienced costs.

In practice, cost-benefit analysis can vary from a simple back-of-the-envelope calculation which quickly reveals an unambiguous preferred course of action to extremely large and complex models which in the end yield only inconclusive evidence on the most desirable alternative. However, most of these analyses follow a fairly standardized series of procedural steps. These may be summarized briefly as follows:

1. Identify the real objective.

2. Develop valid operational proxies for the objective (if necessary) and decide at least initially on specific quantitative values.

3. Structure the problem so that it is a question either of maximizing the benefits or outputs for a fixed budget or cost; or of choosing the alternative which reaches some fixed and specified level of benefits at least cost. (At the same scale of activity, these two approaches are logically equivalent and will yield the same answer.)

4. Array all of the alternatives which can accomplish the objective--including all of the unorthodox and unpopular ones. Look for interactions between alternatives and for interesting new combinations of alternatives. (It is probably at this point that the analyst has his greatest opportunity for imaginative and creative thinking.)

5. Analyze alternatives in detail and develop total costs. Be sure to pay particular attention to the changing marginal costs of the various alternatives. This is often the clue which suggests proper mixes of alternatives. Be sure, also, to include all variable costs--capital and operating--and show them over some appreciable time period. Include where possible measurable social or other spill-over costs.

6. Display the cost stream of alternatives over time and express a time preference by discounting the total cost streams back to present values using an appropriate discount rate.

7. Estimate or describe other spill-over effects, risks, uncertainties, and unquantifiable aspects of the problem. Perform sensitivity analysis.

8. In light of the context of the problem and whatever constraints it implies, apply an appropriate economic criterion and recommend a preferred alternative.

In the above checklist, it was assumed that there were a small number of discrete alternatives from among which to choose; and it was further implied that these were already the most efficient examples of their kind. This is hardly ever the case in practice. In this situation it is useful to analogize from the economic theory of the firm and apply the notion of a "production function" to the educational process. Like most analogies, it does not fit well; but it does yield some interesting and useful insights. A short explanation of this key concept follows.

In order to make objective comparisons among alternative educational programs or to make optimal resource choices within a given educational program, a specification of the technology of each program must be obtained. This technical description specifies the relationship between the objective of the program and the various resources "needed" to attain that objective. Thus, in the case of a program designed to raise students from one educational level to another (2nd to 3rd grade), a technical description would detail the number of teachers, classrooms, administrative staff, books, and other equipment used to raise a given number of students from the second to the third grade.

In specifying the resources used in increasing the educational levels of students it is not always possible to indicate fixed quantities of resources which are essential to a given increase in educational level. Generally it is possible to vary the proportions in which these resources are used without changing the quality or quantity of output.

For example, the number of teachers used for a given number of students might be reduced if a compensating increase was made in the administrative staff. An increase in capital equipment might make possible reductions in administrative staff. Therefore, a description of the technology of the educational program must be broadened to describe the underlying relationship between these inputs in a way which allows for substitutability of the type described above.

Most educational programs, moreover, are defined in terms of an objective of variable magnitude. For example, if our program is secondary education, our objective might be to get as many students to graduate from high school as is possible with a given budget. For any given budget and program, the number of students graduating will undoubtedly depend on the proportions in which the various inputs are used. A prime purpose of a technical specification is providing a means for determining the input mix which satisfies our educational objective at the highest possible level.

In attempting to describe the technological relationships of the sort suggested above, a form of production function analysis used in describing industrial and agricultural technologies may have applicability. In the industrial context, by studying data on the inputs used and outputs produced by firms in a particular industry, the effect on the level of output of changes in the level or pattern of resource use can be estimated statistically. This description of the relationship between inputs and outputs is termed a production function.

In attempting this sort of specification for the educational system, one must first decide on a unit of measurement--the student, the class, the school, or the school district. Then data can be collected which describe the resources used over a particular period and the level at which the educational objectives of the unit considered were satisfied.

In any particular circumstance the usefulness of such a function will depend upon the analyst's ability to choose measures of inputs and outputs which are useful for policy-making purposes and which provide the basis for statistically reliable estimates. Some of the problems inherent in developing these measures are described below.

The Choice of the Unit of Production

In developing the data for estimating an educational production function, the analyst must decide upon an elemental unit of production analogous to the firm in the case of industrial production. This unit should be chosen to embrace fully a set of decisions about the level of input and outputs while containing as few aggregates of such decisions as possible.

From a conceptual point of view, the individual student represents the best choice of a unit of production. To consider elements of production broader than the individual student (a class or a school) requires one to use averages of these student characteristics as inputs to the production process. In this averaging a substantial degree of explanatory power will be lost. Finally, the objectives of most educational programs can be most generally expressed in terms of an individual student.

For example, the most simplistic of educational objectives, maximizing the number of graduates from any given body of students, is equivalent to maximizing the sum of the probabilities of any given student graduating. These probabilities can, for purposes of analysis, be expressed as a function of the student's own resources and the resources available to him within the educational system. If this functional relationship can be estimated, the pattern of resource use which maximizes the number of graduates can be determined.

One of the prime advantages of using the student as the basic unit of production is that it provides an extremely large data base with which to work. Even within an individual school district or school there would be a substantial number of observations on which to base the analysis. Accurate analysis of school technology requires specifying a very large number of characteristics of both the students and the schools. Moreover, efforts to determine the separate effects of these inputs will be hindered by the fact that under current institutional arrangements, they tend to vary in concert. Thus, schools with the "best" teachers and equipment often contain the "best" students as well. The large data base is likely to be essential for estimating the separate effects of these variables.

The greatest difficulty in this approach lies in the current availability of data. Generally, while average student data are available for a school or school district, data on the level of school resources devoted to each individual student are more difficult to obtain. Moreover, the sheer task of collecting and analyzing data for literally millions of students seems substantially more difficult than dealing with hundreds of schools and school districts.

The availability of modern data processing techniques, however, makes this difference more apparent than real. The necessary data on students, much of which is already collected by schools as a matter of course, can be conveniently stored on computer tape or disc and programs could be devised to use these data not only for administrative purposes, but also for continuous technical analysis of the educational process. The outlines, and in some cases, the operating basis for a system of this sort have already been developed as indicated earlier, under Dr. Alvin Grossman of the California State Department of Education.

Measures of Outputs

Choosing appropriate measures of educational output poses a number of inherently difficult problems. These difficulties stem not from the nature of production function analysis, but from disagreements among educators as to the appropriate function of the educational system and as to the validity of objective tests in evaluating its accomplishment of this function. In general, however, it is assumed that schools exist to increase students' knowledge of specific subjects and to provide them with tools necessary for acquiring additional knowledge on their own.

It is further assumed that tests can be devised which measure a student's knowledge in various areas or their facility with intellectual tools. While this may overstate the current sophistication of educational testing, the state of the art is undoubtedly moving in this direction.

Given the existence of tests of this sort, the change in a student's test score over a given period of time represents a measure of educational output over that period. Of course, for any given student it may well be argued that this gain is a function of a variety of factors outside the educational process. This, of course, is the precise virtue of attempting to devise a functional relationship between various educational inputs and this measure of output. To the extent that gains in a student's knowledge result from factors the student brings to the educational process, this effect can be separated from the direct effect of resources expended by the educational system. Moreover, gains which result from factors not included in our production function will remain part of the unexplained variance in output--again a conclusion of substantial interest.

In order to use the approach described above, it is not necessary to agree on a single test of educational achievement. A variety of functions can be developed for tests which measure various aspects of educational achievement. Presumably the narrower the area of achievement which a test purports to measure, the more likely it is that a good functional relationship can be derived to explain variance in student achievement.

We have no reason to believe, for example, that the mechanism by which students acquire verbal skills is identical to that for acquiring non-verbal skills. It might be desirable, therefore, to treat these skills as separate outputs of the educational process and therefore to estimate separately the effect of various educational inputs on their acquisition. A similar case could be made for other divisions of output, and the effective limits on this process lie only in the analyst's ability and willingness to explore new alternatives.

In addition, a number of tests which purport to measure the same output may be available. In order to make an adequate comparison of these alternatives, it would be necessary to engage in longitudinal studies of the relationship between subsequent student performance and test scores. The absence of this information should not in itself deter the analyst from estimating the effect of various inputs on a number of alternative tests. If the effect of various inputs on many of the tests are approximately the same, the debate over which of these scores is the best measure of output becomes moot.

Education is a sequential process taking place over a substantial period of a student's life. In measuring the output of this system, it will be useful to divide this process into a number of intermediate steps. The process is currently divided into primary and secondary schools, and these are further divided into a number of grades. Whether or not these represent natural divisions for the purposes of technical analysis is an important subject for research. On the one hand it is important not to group together steps in the educational process which are technologically different.

Thus, if the effect of teaching quality on educational output varies significantly from the first to the second and from the second to the third grade, it may be useful to treat these as separate educational processes. On the other hand, the more divisions one makes in the educational process, the more complicated and costly the analysis.

One final point. It may often be desirable to dichotomize the possible outcomes of the educational process rather than treating it as measurable by a continuously variable test score. For example, we may be interested only in whether or not a student graduates from high school and not what grades he obtains in the process. A priori there is no reason to assume that this is a better or worse measure than a more continuous variable. If, in terms of subsequent success, we can distinguish graduates from non-graduates but not A students from C students, the dichotomization may represent a better measure of output than the more continuous measure of performance--grades.

The Choice Among Inputs

Very little work has been done in developing the theoretical background for an educational production function. Data on the choice and measurement of specific input variables will only be gathered as a result of a substantial amount of trial and error testing within the educational system. The purpose of this section, therefore, is to indicate the general nature of the variables on which data are or can be made available and the nature of the policy considerations to which these variables relate. Three general categories of inputs are considered: characteristics of the individual students, characteristics of his classmates, and the characteristics of the school environment.

Student Characteristics

There are two general sources of data on those student characteristics relevant to the acquisition of knowledge--psychological tests and objective data on the student's background. In the first category are tests purporting to describe aptitude, motivation, and prior level of achievement. In the second we might include parents' socio-economic status, race or ethnic background, existence of older siblings, health, etc.

In general, measuring these variables and including them in the production function present no theoretical problems. It must, of course, be remembered that the potential ways of combining these variables together in a production function are undoubtedly infinite, and hence trial and error may be a costly and endless procedure. It is wise, therefore, to have in mind some limited number of specific hypotheses about how these variables are likely to interact. For example, are socio-economic status and aptitude likely to be multiplicative, additive, or exponential in their combined effects?

One statistical problem which should be noted concerns the probable collinearity of these characteristics. It is likely that people who come from enriched socio-economic backgrounds will also have favorable attitudes toward success and high scores on academic aptitude tests. This will make it difficult to separate statistically the effects of these measures. One solution to this problem is to select a sample in which students with widely diverse scores in these three categories get greater weight.

The real problems inherent in the analysis of these student characteristics emerge not from estimating their effect on educational achievement but in interpreting these estimates for policy purposes. In doing so it is, of course, important to remember that the school system cannot alter these characteristics by selection. All these students are going to be in school regardless of their potentialities and the educational decision maker must decide how resources will be distributed among them.

In using the production function to aid in this decision the mutability of each of these characteristics must be taken into account. If on average the children of rich parents appear to have more educational potential than those of poor parents it does not follow that the school system should spend more money on the children of the rich than of the poor. It must be determined whether the enriched environment of the former can be created, either in or outside of the school system, and at what additional cost. That is, of course, true of psychological tests purporting to measure aptitude. Few psychologists will argue that these test scores are unchangeable, and an important area of educational research lies in identifying the sources of success in high aptitude students and attempting to alter apparently low aptitude students in that direction.

Characteristics of Classmates

An area over which the school system has a great deal of control and one in which its decisions are fraught with social importance is the intellectual and socio-economic mix of classes or schools. The production function can be extremely useful in providing reasonably reliable data on the educational impact of varying degrees of heterogeneity within a particular student body.

Presumably, all those characteristics which either help or hinder a student's educational attainment are likely candidates for spillover effects on other students. Thus it would be reasonable to examine the effect on the educational potential of low aptitude students of being in a class with generally high aptitude students. Similarly, one might wish to test the effect on poor students of going to school with rich students or the effect on Negroes of going to school with whites. By evaluating these effects it would be possible, given the objectives of the school system, to decide on an optimal degree of heterogeneity in a given class or school.

The central problem of including the spillover effects on students of their classmates' characteristics is determining who their classmates are. For elementary school children the problems are minor. They usually spend all day in a single class with a fixed group of classmates. In secondary school the possible interaction patterns become more complex, and the student may have a different set of classmates in every course.

We can, at least, make a tentative approach to this problem by determining the effect, if any, of being in classes with other students of differing aptitudes. Moreover, where our data base includes a large number of schools we might also estimate the effect of the student composition of the whole school on each student. If this crude approach is unsuccessful, it would be necessary to consider a more complicated pattern of social interaction in the schools.

School Characteristics

The school inputs most easily incorporated into a production function are class size and teacher quality. The measurement of class size is, of course, straightforward. It should be noted, however, that the effect of this variable need not be continuous. Where class discussion is a component of instruction (as in class sizes of less than 100) this factor may be crucial. Once the mode of instruction shifts to the straight lecture, there is no reason to expect the same effect.

The most easily available measures of teacher quality are teaching experience and educational background. (Since these are of prime importance in teacher pay scales, they should certainly be examined.)

While other forms of school expenditure might easily be included as variables in our production function, this should be done with caution. Many inputs into the educational process are not continuously variable in the relevant range. They generally must, for any given technology, be used in fixed proportions. While alternatives to these resource patterns do exist they require the use of distinctly different educational programs. Ideally, the optimal combination of the variable factors should be determined using the production function approach and then discrete comparisons can be made among alternative programs.

Teacher quality can be measured by teaching experience and educational backbround. Experience may be represented by the number of years the teacher has been teaching, the types of schools, grades, and subject matter, the variety of teaching situations to which the teacher has been exposed.

Educational background may include the schools at which the teachers received their training, the courses taken, the degrees held, the amount of advance work taken, foreign travel. Whether or not these particular attributes of the teacher actually have an impact on teacher productivity is a subject that needs research.

Other personal attributes of the teacher, such as age, sex, marital status, temperament may also have a bearing on teacher effectiveness and need to be analyzed. Tests may have to be developed for measuring such factors as temperament, aptitude and motivation.

The influence of other factors such as salaries and working conditions on teacher productivity is another area of production function analysis which should be investigated.

Finally, production function analysis must seek to determine which types of teachers and teaching situations should be related to which kinds of students to maximize student achievement. Similarly, the relation of non-teaching personnel and physical facilities and equipment to teacher productivity must be incorporated into the analysis.

Sophisticated analysis using concepts such as the education production function, as described above, require analytical staffs of high competence, more adequate data than are currently available, and in general involve questions of such broad significance that they should be attacked only at the highest levels within the state school system--and, perhaps, even at the national level.

In addition, however, there is a wide menu of problems facing California school administrators at all levels which are amenable to solution using a range of analytical techniques from operations research to cost-benefit or systems analysis. Which technique is best fitted to the kind of problems a school administrator faces depends on how "operational" his responsibilities are, what his decision-making time horizon is, and what kinds of constraints he must cope with.

Generally speaking, the various tools of operations research are most useful for lower-echelon managers (principals, perhaps in this case) and cost-benefit analyses are most helpful at the Department of Education level. Superintendents of school districts would probably have problems requiring a mix of the various analytic tools available.

In all of these cases, however, the administrator's difficulty likely will not be one of finding unsolved problems, but one of ranking them by potential payoff (if successfully solved) and the probability of successful solution. In effect, the principal decision maker at each level needs to do a little expected value analysis before deciding where to invest his scarce analytical resources!

The range of problems with which a school principal has to contend will seldom be of the classical, full-blown resource allocation variety. For the most part his problem solving will involve operations research which can help him resolve such technical problems as designing traffic patterns for changing of classes or better utilization of physical space to accommodate enrollment increases.

For the superintendent of a school district, the range of problems for which cost benefit analysis could be of definite help in decision making is much more extensive and varied: where to locate new schools; minimum time or distance transportation patterns for moving students to and from schools; best mixes of manual and automatic record keeping and data processing system; choices between expansion of capacities through either more intensive use of existing physical plant, expansion of existing physical plan, or construction of new physical facilities; rigid versus flexible class scheduling systems; charter, lease, or buying equipment such as buses; centralized or decentralized purchasing; in-house versus contracting out of maintenance services; alternative means for improvement in teacher productivity; evaluating improved means of pupil performance; and alternative personnel recruiting techniques. This is by no means an exhaustive list of the kinds of problems which superintendents constantly face and which are amenable to cost-benefit analysis.

For the State Department of Education there is also a wide range of important decisions that can be made with the aid of cost-benefit analysis. Some of these are: optimal location of data processing facilities and analytic staffs; choice of alternative measures for assuring supply of professional personnel; choices among and between textbooks and other classroom materials; general versus vocational curricula; intensity and variety of adult education programs; choices among socio-economic equal opportunity programs; nature and extent of special services to school districts; preschool versus compensatory versus remedial education programs; and core versus elective curriculum choices. In addition to these types of problems, there are a number of more basic areas which require the development of data and analysis to make cost-benefit analysis applicable to a wider range of problems.

For example, the nature of various educational production functions needs to be analyzed. What combinations of teaching staff, non-teacher staff such as librarians and counsellors, equipment, facilities, and educational materials yield what kinds of student performance levels? What combinations of students of various socio-economic backgrounds are conducive to improvement in student achievement in what subjects? What is the relative importance of school and non-school environmental factors on student performance? What standards of achievements should be demanded of students with varying levels of ability? Sensitivity analysis can be used to determine whether improvements in testing and aptitude measurement would improve resource allocation decisions. Again, this is but a small portion of the many analytical problems which need to be solved to help top level administrators utilize their scarce resources more efficiently.

Two examples developed in somewhat greater detail are described in the following sections:

Case One: Choice Between Rigid and Flexible Class Scheduling

This example will show how cost-benefit analysis could be used to help a district superintendent make a decision about the type of scheduling which should be instituted in the secondary schools in his district. Assume that the high schools in the district are currently operating on a fixed schedule of eight class periods of 45 minutes length per day. The superintendent is considering whether the schools should adopt a scheduling system that permits individual students to have a variety of classes whose lengths may vary from fifteen minutes to several hours, depending on the student's interest and/or ability in the given subject.

Thus, for example, a student who has already acquired a good command of English grammar may be permitted to schedule a fifteen minute class in English grammar and a 75 minute class in English literature rather than have to spend 45 minutes on each subject.

Whether or not the schools should convert to this flexible scheduling system is a decision that is highly amenable to cost-benefit analytical techniques. The relative benefits from the alternative forms of scheduling can be compared and the costs of the alternative forms of scheduling can also be calculated. Then the administrator can determine which form yields higher benefits for a given expenditure of funds.

The administrator can also regard his district as a system of inputs and outputs which must be related in a way that will satisfy the objective of the schools' existence. The superintendent may decide that the objective of his school district is to produce students who are capable of being admitted to the best colleges or that his objective is to produce well-rounded, generally educated individuals who will be active, well-informed citizens. Or the administrator may decide that the objective of the schools in his district is to produce graduates who are capable of performing the various tasks required by the complex economic system now characteristic of the state. Another superintendent might consider the correct or best objective of his schools to be the development of each individual to his fullest potential.

In other districts, the superintendent may view the schools as custodial institutions to provide a place for young persons to be who are required by law to remain in school until a certain age. In most instances, the superintendent will envision a combination of these objectives as being appropriate to his district.

For the purpose of this example, it is assumed that the superintendent has a combination of objectives which includes the production of students who are capable of college work, the production of students who will be able to perform useful economic tasks, and that all students are expected to achieve certain knowledge and attitudes pertinent to their becoming good citizens of the community.

At first it may appear that the objectives are too broadly stated to be of any use in determining how classes might be more efficiently scheduled. However, by translating the objectives into quantifiable and operational terms the relationship can be made clearer and the analysis can contribute insights which are not readily obvious.

The objective of maximizing the number of students eligible to be admitted to college can be translated into terms of student performance in high school, as measurable by the types of courses taken and the grades achieved. There are, of course, other significant indicators which should be taken into account; some of these were discussed earlier on pages 179-80.

Similarly, the objectives of preparing students for the working world can be translated into mastery of certain subject matters. The relationship between the allocation of the inputs--in this case the resources of students and faculty and support of personnel time--and the production of output--performance in desired areas--becomes clearer. Improved utilization of students and faculty time that could be made possible by a reorganization of the uses of that time could lead to improved performance in the critical subject areas relevant to the student.

This would be the theoretical justification for a change. Whether or not the change ought actually to be made would depend on the costs of making the change compared to the benefits that could be derived from it. The purpose of cost-benefit analysis is to make these calculations. Under the assumption of a fixed budget, the change would be desirable if it can be shown that a flexible scheduling system yields higher student performance or that the same performance could be had with a smaller budget.

A systems approach would also lead the superintendent to consider alternative ways of improving student performance other than the way in which classes are scheduled. Would a reallocation of resources from personnel to facilities achieve a greater improvement in student performance than a rescheduling system? Would more individualized instruction achieve better results for the same monetary outlay?

A cost-benefit analysis would work out the output implications of these various different ways of organizing the inputs and would convert them into a common monetary denomination to permit the decision maker to make his choice. To the extent that not all parts of each program can be converted readily to comparable monetary terms the administrator must use judgmental values of costs and benefits in order to make his choice.

For the purposes of this example, it is assumed that the administrator's decision is limited to choosing between the two types of scheduling.

The first task would be to find ways of measuring the inputs and outputs of each of the alternatives. Student performance as measured by grades or test scores could be taken as the measure of the output of each program. Other measures that could be used, as noted earlier, are the proportions of students who do get admitted to college, the proportion of students who are hired on well-paying jobs, and the proportion of students who become active citizens, i.e., who vote regularly or who run for office. These are only some of the measures that would be needed to fully represent the objectives. The data may already exist (as in the case of test scores or grades) or may have to be developed.

For example, periodic surveys may have to be taken of the school's graduates to determine what kind of jobs they are able to get. Tests may have to be developed to measure performance more accurately than existing ones.

On the input side, data would have to be gathered or developed on the amount of time students spent at their various subjects both in school and out; on the amount of time students spent on non-school activities that may have spillover effects on school performance; the amounts of time teachers spent in preparation and in actual class time and other activities directly related to their duties such as grading tests; the amount of time they spent on non-school activities that could have spillover effects; the amount of time support personnel spent, the facilities and equipment used by students and staff such as teaching machines, audio-visual aids, and library books--both school, public, and private.

Collection of some of these data, such as amount of time spent by pupils and staff in school, would be relatively easy to accomplish. Other data, such as how non-school time is spent, would have to be collected by periodic surveys, sampling, regular reporting, or other such techniques.

Information on the relationship between variations in the inputs and their effects on output (technically, the production function) could be gathered by looking at the experience of other schools who had similar characteristics and used an alternative scheduling system. Or data could be developed by running a pilot test under controlled conditions in some of the district's own schools.

Information would have to be gathered separately on the effects of scheduling on academically oriented and job-oriented students. Do the needs of each differ? Do their reactions differ? Does the job world demand people adjusted to fixed time schedules? Does the student perform better when the time spent on subjects reflects his relative interests in them? Would the system tend to produce curriculum choices that concentrate on developing the strengths to compensate for the weaknesses or to eliminate the weaknesses? Do the objectives as developed and stated earlier indicate which direction should be followed?

Analysis of production functions, that is, of the effects on output of changes in the quantities of inputs and the ways in which they are combined, is a major area in which schools need analysis. The results of the cost-benefit approach depend on how well the nature of the production function is known and understood. Since this problem is discussed at length elsewhere in this report, this example assumes that the superintendent is able to develop or collect the data needed to construct the relationship or utilize the analytical resources of the State Department of Education.

Once the relationship between the inputs and the outputs has been established, the remaining step in the analysis is to calculate the costs of the inputs under the alternative choices. These costs should include not only the direct cash outlays spent on resources but also the opportunity costs of the resources.

In this case, for example, the input of student's time, although it does not involve a cash cost to the school budget, does have an important opportunity cost to the student, to the school, and to society as well. If the student's time is not well spent, his resources are not being used as efficiently as they could be and the cost of this waste is his lower performance. The theoretical justification for a changeover to a flexible scheduling system suggests strongly that neglect of the opportunity cost of the student's time may be the prime inefficiency in the rigid scheduling system.

Similarly, there are also opportunity costs involved in the allocation of faculty time, in addition to the direct cash outlay involved. If the faculty is being paid at professional rates for the time it spends on clerical duties such as roll taking, record keeping, or patrolling lunchrooms, there is a high opportunity cost involved. A resource which is not used in the function which brings the highest return incurs an opportunity cost. In this case, the cost can again be the lower performance of the students than would otherwise be possible.

Reorganization of the scheduling may reduce the total number of faculty members needed since the productivity of each member may be increased. However, the number of support personnel may be increased. More clerical staff and equipment may be needed to handle the increased record keeping. More counsellors may be needed to analyze the data and advise individual students on planning programs that suit their specific needs. More librarians may be needed if more students are able to engage in independent study in the subjects in which they are well advanced or competent to deal with. More equipment may be needed to permit students to engage in individual study and practice of languages or vocational skills.

Alternatively, different types of equipment than presently existing may be needed rather than an increase in the total amount of equipment. Equipment, like personnel, may also involve opportunity costs. Equipment which lies idle, or which does not meet the needs of the persons who utilize it, is also a waste of resources.

The physical plant may also need reorganization with a change in the scheduling system. More space may be needed for individual study areas, and less space for large group classes. More time may be needed for non-productive activities such as changing classes unless the physical space can be reallocated to offset this effect. More administrative effort may be required to organize the more complicated scheduling task. However, less administrative time may be engaged in disciplinary actions if the amount of student boredom and restlessness is decreased through better utilization of their time.

The costs associated with each of these changes would have to be calculated. In the case of personnel, the salary and fringe benefits of additional personnel and the amount of time that would be needed would be a measure of their costs. Alterations in physical plant may include labor and material costs. If the students are required to keep accurate and extensive records of their time spent in studying various subjects, an implicit cost must be imputed. This could be measured by the cost of the best alternative system of recording the data, for example, having automatic machinery, or hiring clerks, or having the teachers keep the records.

A thorough analysis would require all the implications of a change to be traced and priced out. In particular, attention must be paid to the hidden opportunity costs and in many cases special work must be done to calculate the value of such costs. There is, therefore, considerable room for judgment on the part of the cost-benefit analyst. The decision maker must be careful to understand how the calculations are made, what assumptions are used to derive implicit costs (and also for benefits if there are no simple measurements of outputs), and what range of alternatives was compared in the analysis.

Thus, the final decisions of the administrator must continue to weigh the calculations in the context of the information available for the analysis as compared to the type and amount of information that is still lacking. The relative areas of knowledge and ignorance are themselves an important piece of information that can help the administrator. Some sensitivity analysis would aid the administrator in knowing whether the effort to reduce the areas of ignorance would be worthwhile or not. The acquisition of information itself has a cost, and more data may not improve an analysis in proportion to the cost of acquiring it.

Assuming that the superintendent, on the basis of his evaluation of the analysis, decides that the flexible scheduling system will yield improvements in the students' performances. That conclusion, however, may lead him to reconsider his objectives. If the new system leads to speedier attainment of the current performance standards set by the school district, is it possible that the total time which the student need spend in the school system could be less than the traditional twelve years? Should students then be permitted to graduate whenever they meet all the requirements or should they be required to remain the full twelve years? Is the real objective to establish the standards or is it to accept the twelve year requirement and maximize the standards of knowledge and skill to be acquired in this period of time? How is it to be determined what the opportunity cost is to a student who is required to remain in school for additional years? Is the superintendent willing to accept the implication of a smaller budget for his district if the increases in productivity indicate that it is possible?

In summary, then, the analysis brings the decision maker back to his point of origin. It helps him to clarify what his objectives are and how to proceed to accomplish them.

Case Two: Choice Between Preschool, Compensatory, and Remedial Programs

This problem is chosen as an example to illustrate how cost-benefit analysis can be used at the State Department of Education level.

The Department of Education has a vastly more complex system to analyze and administer than does an individual school district. Furthermore, it has many more functions than does an individual school district. The Department of Education must develop information and analytical systems that can help it estimate the total resource needs of education in the state and to be able to justify the relative demands on the total available resources of the state for its educational objectives. It must be able to compete with the other demands on the state's resources. One of the most important problems facing the community today is the problem of the minority and socially and economically disadvantaged members of the community. The role which the educational system of the state can play in solving these problems is a subject which the State Department of Education can study with the aid of cost-benefit techniques.

For the purposes of this example it is assumed that the State Department of Education has two primary objectives: (1) to ensure that the highest quality education, both academic and vocational, is made available; and (2) high quality education must be equally available to all segments of the population of the state. These goals are broadly stated and must again be translated into operational terms--a process which also helps to clarify their precise meaning.

Top-level administrators may decide that the appropriate way to translate them into operational terms is to focus on the output of the system, the quality of the graduates produced. In doing so, they would consciously reject the use of measures of quality of inputs--such as how modern are the facilities, how many teachers have master's degrees, how many library books are in the schools--as measures of output. The characteristics of the inputs themselves cannot be taken as a measure of the objective of "high quality education" unless they can be shown to have a measurable impact on the performance level of the students. (Traditional organizational units such as school districts may also lose their relevance in this type of analysis unless they are shown to have a direct bearing on the objective to be pursued.)

Assume, then, that the Department of Education administrators have decided that both of their objectives are achieved if the following results are produced by the school system: the proportion of students who pass certain specified high levels of achievement (which may be measured by test scores in various subjects, or by the proportion who graduate from high school) is similar for each socio-economic group; and simultaneously, the distribution of achievement levels among the various subject areas is similar for each socio-economic group and the proportion of each group choosing vocational and academic curricula is similar.

These are all measurable outcomes. The administrators are then faced with the decision of how to organize their resources to produce these results as efficiently as possible. Given the fact that children from different socio-economic backgrounds already have by age five various different attitudes and skills that will affect their school performance, the administrator must decide how those with initial disadvantages will be brought up to par with the others. Since the focus is on the end product of the entire school system, the results must be achieved by a given time.

The administrator, however, has a number of options open to him to achieve the specified objectives. He could allocate his resources to a preschool program such as Head Start so that all the children enter kindergarten with similar backgrounds. Or he could allocate funds for a compensatory program to help those who need it after they have been in school. Or the funds could be allocated for remedial work after leaving the high school. Each of the programs has its advantages and disadvantages. The analyst would have to gather information on each of these programs to determine how effective they are and how lasting the effects are.

The preschool program may equalize the advantages at the early stages but may not be sufficient to ensure that children from disadvantaged backgrounds will retain these beneficial effects throughout their school years. Do some children continue to have disadvantages at home that require the schools to have compensatory programs throughout? Should special remedial programs be concentrated at the high school level or is it too late by then to overcome the damage that has already been done? Is there a difference in the type of compensatory or remedial education needed for children from different social and economic backgrounds or is their basic educational problem the same? With what intensity and duration should remedial programs be offered?

Can a restructuring of the traditional elementary, junior high school, senior high school system reduce the amount of compensatory and remedial training needed? Would an ungraded system or a structure of schools organized around subject matter rather than age reduce the overall amount of compensatory or remedial training needed? Would a more flexible choice of curricula or educational materials geared to the interests of the individual students reduce the amount of compensatory and remedial programs needed?

Would the elimination of standardized textbooks improve student performance? For maximum benefits should schools be located in areas serving homogeneous or heterogeneous populations? What mixture of student characteristics produces the highest yields in student performance? Does the most desirable mixture of students change by age level? By level of achievement? Is the school the best place to try to remedy the disadvantages created in the different home environments of the students?

Should the resources of the general community be shifted away from the schools and applied in altering the non-school environments? Should resources be spent on educational programs or on general health and environmental programs. Should the resources be spent on improving the teacher recruitment and selection process? Would improvements in teachers' salaries and working conditions improve their students' performance levels?

For the sake of this example it is assumed that for the immediate present the prospects of altering the traditional structuring of the school system are rather dim and general dissatisfaction in the community requires short-term action. The decision maker is, then, faced with the prospect of choosing to concentrate his resources on preschool children, children already in school and those who are on the verge of dropping out, or who have already dropped out.

Cost-benefit analysis can be used to help the administrator make this choice. However, it will be clear that the results of the analysis will not automatically determine the selection but will require that the administrator make value judgments about the relative merits of the alternative programs. Further, the choices need not be mutually exclusive and cost-benefit analysis can help determine the relative amounts of resources going to each program.

For the preschool program the costs involved would include those of: personnel, trained and untrained, support personnel, physical facilities, classroom materials, transportation to and from the school, health examinations (including eye and dental examinations) rectification of health problems discovered, community relations to secure the cooperation of the parents involved, procedures for selection of the children, allowances for food and clothing needs, and provision of materials which the children could work with at home.

Assessment of the benefits would involve measurement of the improved performance of these children during their regular school years, reduction of disciplinary problems, delinquency, and drop-out rates improved earnings capability, and finally, inter-generational transfers of favorable attitudes towards education which might well eliminate the need for such programs in the future.

The costs in this case can be relatively easily measured by the actual outlay of funds needed to acquire personnel, materials, or facilities.

The benefits, however, are much more difficult to measure: some of the benefit indexes depend on attitudinal measures, and these are always tricky; some benefits may take long periods of time to acquire; and few of the benefits have direct dollar values.

The preschool program may affect only a fraction of the number of children subsequently enrolled; and the beneficial effects may last only a limited number of terms. The values of the benefits would have to be measured differently for the different products of the program.

For those who would have dropped out without graduating, even in the absence of the program, the benefits could be measured by the improved achievement level at the time at which they actually dropped out compared to what it would have been without this stimulus.

For those who may have experienced initial improvement following the program but who regressed to the level of achievement that would have occurred in the absence of the program, the benefits may not be completely reduced to zero; there may have been some benefits in the reduction of the probability of being a disciplinary problem in school or a delinquency problem out of school during the years in which the program had some beneficial effect.

For those who would have dropped out but did not because of the program, the benefits can be converted to dollar values by measuring the difference in average salary earned in the period immediately following departure from school by dropouts and by graduates, and by the value of the shorter periods of unemployment experienced.

If the administrator has decided that the objective of the schools is to prepare students for the economic world, then he may decide that the earnings and unemployment indicators used above are a fair measure of the value of schooling.

The benefits in the reduction of disciplinary cases can be measured by the value of the time of the school personnel saved. The reduction in delinquency could be measured by the savings in court and in correctional personnel and savings in property damage.

The inter-generational transfer in attitudes could be assessed by the measured changes in the probability that children of those affected by the program would graduate from high school. For immediate analytic purposes, data on past generations can be reviewed to determine how the educational experience of one generation is related to its parents' generations as a rough approximation of the influence of the preschool program.

The costs of the compensatory education program would include the trained personnel needed in the classrooms; personnel such as clerical help, librarians, and special resource persons; counselors to identify those needing compensatory education and the fields in which the help is needed; and the support personnel which counselors may need to provide and analyze the records.

Physical facilities may be needed if existing facilities are inadequate; special equipment, teaching machines, audiovisual aids, and equipment for learning vocational skills may also be needed.

Furthermore, the student who is identified as needing compensatory aid may be so demoralized that his performance in all subjects may suffer. In addition, the student's performance on other subjects may suffer if his compensatory courses reduce the time he has to spend on his other studies.

These costs may be measured by the additional amount of resources needed to restore the student's performance to its prior level.

The benefits from the compensatory education program would be similar to those for the preschool program: improved performance during the remaining school years, lower delinquency rates, reduced disciplinary problems, reduced dropout rates, intergenerational transfer of attitudes. These benefits would be measured in the same way that they were for the preschool program.

The costs of the remedial education program would include the professional teachers needed, support personnel, special resource consultants, counselors, physical facilities, classroom materials, and special equipment. If the remedial education program is the only available program for those who dropped out or for those who graduated with low achievement levels, the opportunity cost of not having a remedial program may be very high. If the program represents the last chance, the absence of such a program could leave a sizable number of people (which would be cumulative with each succeeding year and in which decreases would occur only by the slow process of attrition) without the opportunity to acquire skills when they discover they need to.

The opportunity cost could be measured by the permanent loss of increases in earnings over the lifetimes of the persons who would have used the remedial education program. (This cost obviously would have to be translated into dollars of present value using an appropriate discount rate.)

The benefits from the program would be the increased economic productivity of the persons using it and the favorable inter-generational transfer of attitudes. There may be an intangible social benefit in that every person may feel that there is "another chance" or one avenue of mobility open to him if he wants to use it.

On the other hand, there may be a benefit from not having the program if the prospect of having to "make good" at the only available opportunity increases the number of people who will perform well in formal schooling and which may alter their implicit calculations of the costs and benefits of graduating or meeting the specified performance requirements.

The nature of the production function in each case will determine the optimal mix of personnel, equipment, and facilities required for each of the alternative programs. The more malleable inputs represented by the preschool aged children may require fewer costly personnel and environmental facilities and materials. However, they may require expenditures on food and clothing that would not be necessary in the other cases.

The remedial education program may require heavier personnel inputs of student and staff time since it requires undoing the damage already incurred and only then acquiring the needed increment of skills or knowledge.

Of course, combinations of the basic alternatives need also to be investigated.

Some Problems of Implementation

If it is decided that the potential benefits resulting from application of program budgeting and cost-benefit analysis to the California state school system outweigh the costs (and costs there are: in money, in personnel, in transition turbulence, and in personal and bureaucratic trauma) then some careful thought needs to be devoted to problems of implementation.

Problems of implementation fall into a number of categories:

1. Personnel problems
   a. Staffing
   b. Training
   c. Orientation
   d. Organizational location

2. Management Information Systems
   a. Adequate data
   b. Computer support for data processing and problem solving

3. External relations
   a. Acceptance by the users
   b. Informed and sympathetic legislative support
   c. Scale or intensity of implementation
   d. Timing of the implementation

The balance of this report will offer comments on these three classes of problems based in large part on observation of how these problems developed and the solutions attempted in other large complex organizations.

Finding sufficient qualified analysts is probably the single greatest problem of implementation. At the full professional level the skills are scarce and the alternative opportunities for possessors of them are attractive and numerous. But without a cadre of competent professionals, analytical momentum simply cannot be created; worse, analysis practiced by unqualified persons can very often be not simply unproductive, it can be disastrous.

Sufficient numbers of professional analysts to staff all of the echelons and offices needing assistance are not now available and almost certainly never will be. At intermediate and lower echelons it will be necessary to convert some of the regular administrative personnel into at least part-time journeymen analysts. Usually it is not too difficult to find regular staff who have an interest in problems of an analytic character and, most important, have a critical, inquiring, quantitative cast of mind.

A short (3-6 weeks) intense training program in the concepts and tools of formal analysis usually results in producing a thoroughly satisfactory work-a-day analyst. A major problem here (although it surely ought not to be one) is that very few, if any, such short, intense, technique-oriented training courses are available to other than Defense-related personnel. This is an obvious lack to which the Committee may wish to give some attention.

For staff analysts to be productive, they must be able to report directly to, and receive their assignments from, the principal decision maker. Analytical groups, in practice, have grown up in many different parts of organizations: some arise in comptroller offices; others in planning or operations.

From the standpoint of achieving optimal effect and in the absence of other overriding considerations, cost-benefit analysts should be attached directly to the principal manager. Because they attempt to aid the decision maker in performing his central function of efficiently allocating resources, and because they are concerned with both costs and effectiveness, their role differs from that of other specialized staff; and they should be in a position directly to advise the chief decision maker.

Further, it is essential that the principal decision maker and other senior officials throughout the organization be familiar with these new concepts and techniques which will so strongly influence their choice of programs. They must become aware of the potential payoffs of this new approach and they should have some "feel" for the power and limitations of the analytical tools being employed. This implies not a detailed working knowledge of analytic techniques but a general understanding of them. This level of familiarity should be common among all senior personnel and can be generated through orientation sessions of, perhaps, 2-5 days' duration.

A second major area of concern in implementing a new managerial approach is the necessity of providing adequate management data and computer support. Much of the analysis discussed in this paper would be destined to remain in the realm of academic inquiry were it not for the prospect of an adequate data processing system in the California educational information system. As was indicated above, the outlines of a system of this sort have been developed by the Bureau of Systems and Data Processing in the Department of Education. This system would collect together in regional centers data on school personnel, equipment, students, and business services. Computer storage would make this data easily and quickly accessible at low cost.. While the system currently being developed has been designed to undertake data processing for administrative purposes, it is also well suited for the sort of analyses described in this paper.

In addition to data collection, of course, it will be necessary to develop analytic capabilities at the statewide level and in at least a few regional centers. This will require people with training in statistics, psychological testing, economics, and management sciences; computer specialists will also be needed not only in data processing but in scientific problem solving and model building.

Given the unique quality of the data stored in these centers and the opportunity it provides for truly ground-breaking research, the problem of recruiting competent research staff may be greatly alleviated. It is, however, a task which cannot be shunted off as minor. All the computer capability in the world is not going to produce competent, relevant, analysis by itself.

One of the primary virtues of the system being developed by Dr. Grossman is its reliance on regional rather than centralized data centers. This provides one natural set of loci for separate research staffs approaching essentially the same problem from different viewpoints. This should avoid one of the real dangers inherent in centralized data processing systems--the tendency to build an uncritical conformity into the system.

The development of analytic capability at a few regional centers will also give school districts in those areas the ability to examine and challenge educational decisions reached in other regions or at the statewide level. Where these decisions are pregnant with statewide implications, the conflicts over analysis and, ultimately, policy which this may generate, are healthy and necessary.

The last category of implementation problems relates principally to difficulties experienced with the bureaucratic environment. These are, of course, made more or less severe by the mode and pace and implementation.

After an initial analytic capability is created at the Department of Education or regional center level, there will be a problem in convincing some principals and district superintendents that important and truly useful new assistance is available to them. New departures are always viewed with suspicion and in this case it comes with the onus of requiring a new way of thinking about decisions and the implicit threat that traditional solutions may be found to be wanting when put to the test of formal analysis.

Similarly, legislators may be uncomfortable with a procedure redolent of computers, black-box magic, esoteric terminology, and vague threats of counter-intuitive answers to old problems. In both cases a low pressure, intelligent, and straight-forward campaign of orientation needs to be conducted simply to acquaint users and legislators with the real nature of the new system, its strengths, and its limitations.

The pace of implementation will depend critically, of course, on the availability of appropriations, on training facilities, and on the supply of qualified analysts. Even with relatively favorable circumstances, as argued earlier, it would be unrealistic to expect a fully mature system consistently yielding high payoff solutions in anything short of a decade.

This is not to say that important gains cannot be realized immediately (a slide rule, the back of an envelope, and a critical mind may score some impressive gains given a fertile functional area to work in and some freedom to probe the conventional wisdom). But to expect good analysis of the tough central issues rapidly is simply being naively optimistic.

With respect to the critical review of objectives and the detailed development of program budget structures, the pace of development can probably be speeded by, in effect, working from both ends. A general critique of objectives and an overall structuring of a program budget needs to be done by a competent, central staff attached to the highest echelon within the organization. Having developed that much, it is then useful to turn over the skeleton structure to the operating levels of the organization to do detailed reviews of sub-objectives and to generate the fine grain program element portion of the budget. Clearly, the lower echelons have the most direct and detailed knowledge of the organizations' operations, but to allow them to build the program structure from the bottom up is to risk sub-optimizations in goal setting, inconsistency of approach and possible conflicts among intermediate goals.

Summary and Conclusions

Briefly, the conclusions of this report are:

1. A new body of management techniques has recently been developed which considerably improves the quality of decision making, particularly in public enterprises.

2. Two principal components of this new approach are program budgets and cost-benefit analysis.

3. Despite some practical and conceptual development problems, it appears feasible to introduce them into the primary and secondary school systems of California.

4. There is a rich menu of problems to which these techniques are applicable, and successful solutions would yield important gains in the efficiency of the system.

5. California enjoys a unique advantage in that the management data system needed to turn these possibilities into practicalities is well along in development but needs additional support.

6. Given the additional support mentioned in (5) above, the single greatest handicap to effective implementation is the recruitment and training of qualified personnel.

7. A small, well-qualified group of analysts working at a sufficiently high level in the educational system could, however, begin to make progress on both program budgets and cost-benefit analyses almost immediately; and in so doing would provide valuable guidance in the further development of the management data system.

Respectfully submitted,

J. E. Keller
B. I. Wolfman
P. Fong
L. Pearl

January 15, 1968

Glossary

1. **Production Function:** a relationship between inputs and outputs which explains how the inputs affect the outputs and how changes in the quality, quantity, and mix of inputs will affect the output.

2. **Insoquant:** a specific means of stating the production function to show what various combinations of quantities of inputs will produce the same level of output.

3. **Cost:** a measure of what must be given up in order to obtain a desired objective.

4. **Monetary cost:** the amount of money which must be given up in order to obtain a desired objective.

5. **Opportunity cost:** the total monetary and non-monetary sacrifices which must be made to obtain a desired objective. (Opportunity cost may also be defined as the loss of benefits which could have been obtained if a resource had been used in the next best possible way.)

6. **Marginal cost:** the change in total cost that results from an increase or decrease in the output by one unit.

7. **Average cost:** (unit cost) the total cost divided by the total units of output.

8. **Marginal utility:** (marginal benefit, marginal revenue) the change in the total utility (benefit, revenue) that results from a change (increase or decrease) in the output by one unit.

9. **Marginal analysis:** an analysis which stresses that decisions about changes should be made by comparing the cost of making the change (marginal cost) with the benefits to be produced by the change (marginal benefit) rather than by comparing the average cost and average benefit.

10. **Price theory:** a branch of economic theory that explains the role of relative prices in effecting the efficient allocation of resources.

11. **Theory of the firm:** an economic theory which postulates that the objective of a firm is to maximize profits and which describes how the objectives may be achieved by applying marginal analysis and which gives the manager a number of decisions rules to achieve efficient resource allocation. (Example: if the marginal revenue from the sale of one more unit of output exceeds the marginal cost of producing that additional unit of output, then the firm should employ the resources needed to produce that unit of output.)

12. **Capital Investment Theory:** a branch of economic theory which explains the conditions under which investment should or should not take place and what quantity of investment should be undertaken to maximize the firm's profits over time. The theory has been developed to extend to cases of non-profit maximizing organizations.

13. **Present Value Discounting:** a technique to convert a stream of revenue or cost which occurs over a future period of time into a single value which represents the worth of that future stream of money at the present moment. It is based on the assumption that a dollar today is worth more to a person than a dollar at a future date.

14. **Spillover effects:** (external economies or diseconomies) an increase or decrease in the costs or benefits to a person, group, or organization whom an action is not deliberately designed to affect. (Example: air pollution which increases the incidence of lung diseases.)

15. **Trade-off:** the relationship between mutually incompatible objectives which require the sacrifice of some degree of one in order to achieve part of the other and vice versa. (Example: the price stability objective can be achieved only by sacrificing the full employment goal; or speed in an aircraft can only be achieved at the expense of range.)

16. **Sensitivity analysis:** a technique which determines how the results of an analysis would be altered if higher or lower values were used for the key input variables.

17. **Collinearity:** a technical term in statistics to describe the situation in which two of the explanatory variables used in an analysis are highly related to each other.

APPENDIX F

GEOGRAPHIC DISTRIBUTION OF TEACHING TALENT IN CALIFORNIA

Consultants' Report Prepared for the
State Committee on Public Education

By: James W. Guthrie
Douglas Penfield
David N. Evans

Berkeley, California
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APPENDIX F

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APPENDIX F

GEOGRAPHIC DISTRIBUTION OF TEACHING TALENT IN CALIFORNIA

By: James Guthrie
Douglas Penfield
David N. Evans

Innate intellectual capacity and early childhood environment are the two dimensions which have been given the most attention in scientific explanations of human learning. In recent years, however, evidence has begun to mount in support of the importance of a third dimension: access to and quality of formal educational opportunities.

This study concerned itself with a portion of this third dimension, namely the quality of teachers. More specifically, the study had as its central purpose an examination of the relationship in California between the distribution of teaching talent and the geographic location of school districts. The study's primary question was: "Does every California student have equal access to the highest quality teaching?"

All California school districts were assigned to one of four geographic categories: urban, suburban, rural, and small urban centers. Thereafter, each category's teaching talent was assessed on six measures of experience and training. When comparisons were made between categories of districts, the most striking finding was that rural schools possess a disproportionately low number of the State's most highly qualified teachers. Teachers in the remaining three categories appear to possess a more homogeneous blend of talent.

The study's findings are in need of elaboration in order to determine more accurately if differences in teacher quality reflect themselves in differences in pupils' performance. Nevertheless, even without the benefits of extended research, the study's conclusions are sufficient to justify practical steps to remedy the disadvantaged position of rural districts. Specifically, consideration should be given to improving the long-range abilities of rural districts to compete for the most talented teachers by (1) instituting a statewide minimum salary schedule for teachers and (2) increasing the attractiveness of rural teaching by offering benefits such as home building loans and added opportunities for professional contacts and improvement.

Short-range, stop-gap, improvement efforts should be directed at (1) stimulating rural schools' teacher recruitment activities and (2) forming a statewide volunteer teacher corps to assist rural (as well as inner city) disadvantaged schools.

Background

Do Teachers Make A Difference?

The genetically conferred learning capacity of humans has long been a subject for scientific inquiry. Environmental effects have come under study only relatively recently, but investigations to date already mark this area as containing powerful explanatory potential. Suffice it to mention here that these two categories are not, either singly or in consort, capable of explaining all differences in pupil achievement. As influential as nature and nurture may be, other conditions appear to affect student learning. Conventional wisdom suggests that at least some of the additional conditions are related to the individual's access to formal educational opportunities.

Indeed, there is increasing empirical evidence that the quality of formal educational opportunity, particularly the quality of one's teachers, does affect student performance. A study conducted for the U.S. Office of Education by James S. Coleman found 12 proxy measures of teaching quality to be significantly correlated with pupils' scores on achievement tests. The Report states:

> ...The quality of teachers shows a strong relationship to pupil achievement. Furthermore, it is progressively greater at higher grades, indicating the cumulative impact of the qualities of teachers in a school on pupil achievement.[1]

Recent evidence from an investigation conducted by Charles S. Benson for the California State Senate demonstrates forcefully that teacher quality is closely associated with student achievement. The California Senate study discovered a significant statistical relationship between pupil achievement and proportion of a district's teachers in the upper statewide salary quartile.

> ...The interpretation of this finding is as follows: After account is taken of the influence of education of adults and of the income of households in the district, those school systems in the low achievement category that manage to employ a higher-than-expected number of teachers in the upper salary quartile by statewide salary standards have higher-than-expected standards of achievement of pupils and the instruction offered by these teachers who are qualified by experience and training to be paid in the upper salary quartile is positive, and the association stands independently of the known connection between the home environment of pupils and their achievement.[2]

Where are the "Good" Teachers?

If teacher capability affects the manner in which students learn, then in a society committed to equality of opportunity, it would seem important to provide each child with equal access to high quality teachings. Is such, indeed, the case? Does every child in California have equal access to the best teaching? This study's purpose was to begin to answer that question.

There does exist a small amount of information, gathered in other states and in other contexts, which provoked the suspicion that teacher quality might not be uniformly distributed. The previously referred to Equality of Educational Opportunity study, in addition to examining the effects of teacher quality in an absolute sense, also suggests that students in some geographic areas may have access to higher quality teaching than in other geographic areas. Specifically, the Coleman Report compares Census Bureau defined metropolitan and nonmetropolitan geographic areas on its 12 dimensions of teacher quality. Disparities were found to exist in every section of the U.S. For example, on the quality measure of "undergraduate major," 22 percent of nonmetropolitan teachers in the Southwest had an academic undergraduate major as compared to only 7 percent of metropolitan teachers in the same geographic region.[3]

Further suspicion concerning teacher quality inequities comes from a recent Carnegie Corporation-sponsored study by Allen K. Campbell which discovered that suburban school districts tend to spend more per pupil than do the core cities they surround. This finding, and knowing that the overwhelming percentage of a school district's budget is devoted to teachers' salaries, suggests that suburbs generally are able to attract a wider choice of candidates and, thus, may be in possession of a disproportionate share of teaching talent.[4]

In addition to data from the Coleman and Campbell studies, there exists an abundance of anecdotal and common sense information to the effect that urban cores and rural areas are widely viewed as the least desirable places in which to teach and, consequently, attract a disproportionately lower number of the most able teachers. But, whether empirical or commonsensical, more information about the distribution of teacher characteristics is needed. If the teacher's ability, indeed, makes an educational difference, then it is important to know the manner in which such ability is distributed.

The Research Study

Geographic location, the study's independent variable, was classified in an arbitrary, but logically defined, four-part typology consisting of rural, urban, small urban, and suburban school districts.[5] Each of California's school districts was placed into one of these categories on the basis of 1960 census data.

The 22 school districts which fell within a "core city" of a Census Bureau defined Standard Metropolitan Statistical Area (SMSA) were classified as urban. School districts in cities such as Los Angeles, San Diego, Long Beach, San Jose, and San Francisco fell into this category.

Suburban was the category for 171 districts, other than core cities, also located in SMSA's.

The rural category includes those 928 districts outside of SMSA's with populations of under thirty thousand. And, small urban centers were those 109 districts outside of an SMSA but with thirty thousand or more inhabitants.

Teaching ability served as the study's dependent variable and, as with student learning, it is presumed that a large number of abilities, both intellectual and personal, constitute a talented teacher. However, to date, it has not been possible to arrive at a precise behavioral definition of "good" teaching. Consequently, research involving teacher quality has tended to use empirical proxies which appear to be logically linked to the performance capability of teachers. This lack of precise measurement also served as a limitation in this study. However, in that equality of distribution, not a precise definition of good teaching, was this study's goal, it was decided to measure teaching talent along generally agreed upon dimensions of training experience. In other words, this study's measures of teacher quality include those characteristics for which school superintendents generally look when hiring teachers. Moreover, this study's measures of quality are the very ones upon which the salary schedules of most school districts are based. Thus, one way to view the following findings is as an assessment of the relative abilities of school districts to attract the kinds of teachers they desire.

Teacher "Quality" Characteristics

Relevant data were collected in late 1966 and early 1967 by the California Senate Fact Finding Committee on Education. The Committee solicited answers to a 25-question survey from each of California's almost 200,000 teachers (the survey enjoyed a remarkable 95 percent rate of return). Answers to this survey comprised the data for this study.

The Senate Fact Finding Committee requested information on six dimensions which can be construed to bear a logical relationship to the quality of a district's teachers:

1. Years of Service. The assumption here is that experience as a teacher increases one's teaching proficiency; all other factors being equal, new teachers are presumed to be less effective than experienced teachers.

2. Credential Type. The "quality" assumption with this measure is that teachers with "Regular" credentials possess greater ability than those with "Provisional" or "partially fulfilled" credentials.

3. Degrees Held. The assumption here is that the higher the academic degree held the more effective the teacher. (The variable was defined by determining the percentage of teachers in a geographic category who hold degrees above the bachelor's level.)

4. Undergraduate Major. There is evidence to the effect that students who major in education tend to be below the median of their peers in measures of academic performance.[6] Consequently, it seems logical to extrapolate that the larger the percentage of a geographic category's teachers possessing "academic" undergraduate majors, the higher the category's teaching quality.

5. Type Position. The assumption here is that "permanent" teachers (those who have been granted tenure by a school district) are more proficient than non-permanent (probationary, temporary, and substitute) teachers.

6. Special Teachers. The assumption here is that educational opportunity is improved by the presence of specially trained teachers (for the handicapped, mentally retarded, gifted, etc.) and guidance counselors. (The variable was defined by computing the percent of a geographic category's teachers possessing "Pupil Personnel" and "Special Credentials.")

In addition to information on the "quality" characteristics, Fact Finding Committee questionnaire results were also used to compare the four geographic categories of school districts on dimensions such as teachers' sex, age, and place of education (in or out of California).

Sampling Procedures

Modern sampling techniques made it unnecessary to consider every teacher's answers to the questionnaire. It was determined that a randomly selected sample containing approximately 2 percent of the teachers within each geographic category would permit accurate generalizations about the entire teacher population in urban, suburban, rural, and small urban school districts. An approximately 2 percent random sample resulted in the following figures:

Geographic Category	Total Teacher Population	Number in Random Sample
Urban	40,256	929
Suburban	58,100	1,331
Rural	40,774	898
Small Urban	24,253	572
Unmatched[7]	25,985	
Totals	189,868	3,730

Analysis

Once random samples were generated, questionnaire responses of teachers within each geographic category were sorted to determine percentage distributions on the above-described six "quality" dimensions. Tests of significance were then applied to determine the probability that with a 2 percent sample the percentage obtained could have occurred by chance alone.

Findings

A Caveat

The study's findings need to be viewed with some caution. The completion of the questionnaire depended upon a teacher's comprehending a moderately complex set of instructions; consequently, the chance for respondent error was substantial. Attempts were made in this study to correct or eliminate from consideration patently outrageous questionnaire responses (such as a teacher being in excess of 100 years old and annually earning a $60,000 teaching salary). Nevertheless, conditions did not permit statistical refinement of the data to the fullest extent possible and approximately 13 percent of teachers' answers could not be sampled and thus were excluded from analysis.

Rural "Have Nots"

The most dominant finding is that on almost every dimension "rural" teachers as a group appear less able than their urban, suburban, and small urban center colleagues.

When compared on the dimension of position type (Table 1), rural districts have the lowest proportion, 52 percent, of "permanent" teachers (teachers presumed to be capable and thus given tenure). Conversely, rural districts have the highest proportion, 48 percent of "nonpermanent" teachers (teachers on probationary, temporary, or substitute status).

By contrast, only 40 percent of the entire California public school teaching force is classified as "nonpermanent." The figure for urban school districts is an even lower 33 percent. Thus, if the assumption is made that teachers classified as "permanent" are more capable than those labeled "nonpermanent," it is clear that rural districts are suffering.

On a second dimension, credential type (Table 2), rural district teachers are the lowest geographic category in the percent possessing "regular" credentials, and, conversely, highest in the percent operating with "irregular" (provisional or partially fulfilled) credentials. Thirteen percent of rural district teachers are "irregularly" credentialed compared to only 9 percent for teachers in the other three categories. Thus, on this second quality measure rural teaching also appears comparatively low.

On a third characteristic, "years of experience," rural district teachers do not appear at first glance to be at a significant disadvantage (Tables 3 and 4). Forty-one percent of rural teachers sampled had 10 or more years of experience. This compares with 43 percent of urban and small urban center teachers and only 37 percent of suburban teachers with 10 or more years of teaching. In other words, experienced teachers (10 or more years of teaching) tend to be in a proportionally greater degree in urban and small urban school districts (Table 5).

A significant difference, however, is that suburban teachers with 10 or less years of experience tend to have MA or higher degrees, academic majors as undergraduates, and "permanent" (tenured) positions. The less experienced rural district teacher is significantly more likely than his suburban colleagues to have only a BA degree, an undergraduate major in education, and a provisional or partial credential. (In fact, one out of every five inexperienced rural teachers is lacking a regular teaching credential.)

Moreover, an analysis of the age distribution among geographic categories reveals that rural districts draw a statistically significant low percentage of young teachers (Table 6). Whereas 28 percent of suburban teachers are in the 20-29 year-old bracket, only 22 percent of rural teachers fall into this category. It would seem that the rural recruits are less well trained but older than their non-rural colleagues.

A tempting possible explanation is that rural recruits have entered teaching after having experienced dissatisfaction or failure in another occupation. Another guess is that rural districts must press relatively inexperienced housewives into service as the result of teacher shortages. Thus, though rural districts may possess an equitable share of "experienced" teachers, data suggest that such districts do not attract a fair share of the most capable and best trained young teaching blood.

Also, rural teachers appear to have less formal training than the sample of teachers as a whole (Table 7). Rural teachers possess the lowest percentage of advanced (Masters and doctorate) degrees. Whereas urban and suburban districts have 37 percent and 36 percent of their teachers, respectively, in possession of an advance degree, only 29 percent of the rural teachers sampled had a degree higher than a BA.[8]

Rural districts also appear lowest on the dimension of "Undergraduate Major" (Table 8). Only 41 percent of rural district teachers have an undergraduate academic major compared to 48 percent for urban and 47 percent for suburban and small urban center teachers.

The percentage of rural district teachers possessing pupil personnel and special education credentials (Table 9) is 11.8 percent, whereas the equivalent measure for suburban districts is 14.5 percent and the state as a whole is 13.4 percent. This is by no means a drastic difference. It, nevertheless, poses the possibility that rural students do not have equal access to the guidance and special education services which increasingly are judged to be important features of high quality schooling.

Non-Rural Districts: The "Haves"

By contrast with the rural, non-rural (urban, suburban, and small urban) school districts appear relatively homogeneous on this study's quality measures. The two exceptions to this generalization concern temporary and substitute teachers, and male and female distribution patterns.

Urban school district teachers in the sample under consideration were more likely than their non-urban counterparts to hold either "temporary" or "substitute" positions (Table 1). The actual figures for these two categories are 5 percent for urban compared to less than 1 percent for non-urban districts.

This finding lends support to the suspicion that large city districts tend to depress operating expenses by employing teacher personnel who do not technically qualify to be paid in accord with the district's regular salary schedules and thus can be retained at lower wages than otherwise would be the case.

The second non-rural distribution anomaly concerns a disproportionately heavy percentage of female teachers in urban and suburban school districts (Table 10). Urban and suburban districts respectively average 61 percent and 60 percent female school teachers compared to 55 percent and 56 percent for rural and small urban centers. At present, it is not possible to say what effect, if any, this has upon aggregate teaching quality. The result may simply be a sampling artifact, or it is not unlikely that the girls go where they think the eligible males are located.

Conclusions

The differences which separate rural districts from the other three categories are not overwhelming on any one dimension. However, they are consistent; that is, on almost every dimension, rural districts appear to possess less capable teachers, and the differences are sufficiently large as to have only a slight probability of occurring by chance alone. Consequently, it appears evident that some phenomenon is operating which prohibits rural school districts from having equal access to the best teachers in California.

Almost 75 percent of all California school districts were classified as rural by the definitions used in the study. However, these districts tend individually to be small and their aggregate enrollment constitutes only about 20 percent of the State's total public school population. Nevertheless, this is one out of every five pupils in California; a number sufficiently large to warrant action to remedy the inequities involved.

Aside from the very large consideration which needs to be given to assuring each child the best possible educational opportunity, there exists an additional society-wide reason for taking remedial action to improve rural education. Beginning in the 19th Century with involvement in the Industrial Revolution and continuing through and receiving stimulus from two World Wars and the "Cold War," this nation has been undergoing an unprecedented migration to urban areas. The tide of migration has risen until today it is estimated that 70 percent of our population inhabits but 6 or 7 percent of our land. The virtues of rural living are romantically preserved and paid lip service, but people, nevertheless, continue to move to the cities; problems of mass transit, ghetto living, and air and water pollution are an almost inevitable result.

The reasons for urban migration are complex, but it is possible that access to educational opportunity is one of the magnets drawing people to cities. No matter what the aesthetic and moral advantages of rural living can be presumed to be, it is difficult to expect a family to move to or remain in a rural community when to do so entails the rather definite possibility that their children will be subjected to a lower quality educational opportunity than would be available in an urban or suburban setting. Thus, assuring that the education available to rural youth is, at least, the equivalent of that offered elsewhere would appear to be an important step in stemming the tide of urban migration.

Salary: A Chicken or an Egg?

There undoubtedly exist many reasons for differences in teacher quality between various geographic areas. Explanations ranging from climate, to number of eligible marriage partners, to availability of cultural opportunities may all play some part in attracting teachers to school districts.

Also, it would appear reasonable to assume that economic incentives play a role in a determining where teachers will accept employment. And, if annual salaries are taken as the measure of economic incentive, then there may exist a partial explanation for the rural school districts' low position on the teacher quality hierarchy.

An examination of teachers' salaries over the four geographic categories reveals some rather startling differences. The salary level for rural teachers is significantly lower at every quartile level than that of non-rural teachers (Table 13).

When contrasted to the highest paid category, urban teachers, the median annual salary for rural teachers is $1,470 less. At the upper quartile level, rural teachers annually average $1,760 less than their urban counterparts, $1,160 less than suburban teachers, and $875 less than small urban district teaching personnel.

If these differences accurately reflect earning potential within geographic categories of school districts, then they are sufficiently large to detract from the competitive posture of rural districts in the race for the highest quality teachers.

Teachers' salaries are based in large measure upon the individual's years of teaching experience and number of units (or degrees) beyond the bachelor level. Consequently, it is difficult to determine from the information obtained in this study whether the low rural district salaries are strictly a function of the economic incentives offered by such districts or whether they tend to be low in the aggregate because rural districts have the highest proportion of inexperienced teachers possessing no degrees beyond the BA. However, a sufficient amount is known in other contexts about the financial conditions of rural districts to draw the inference that in this instance, salaries probably represent the "cause" rather than the effect side of the ledger.

Recommendations

As is often the case with research, this study's findings tend to raise more questions than they answer. Why do the younger teachers tend to settle in suburban school districts? Why do rural district teachers tend to be less experienced and have less advanced training? Why on most of the measures of teacher "quality" do rural school districts come off second best when compared with all other districts? What part does salary play in determining where teachers teach?

These questions and many more are answerable; however, unless conducted under the unlikely conditions of a "crash" project the needed research could be expected to take anywhere from one to three years. In the meantime, literally thousands of children may be being subjected to educational circumstances which warrant immediate improvement. Thus, the following recommendations are offered as possible means for achieving and maintaining equality of educational opportunity for rural school districts.

Long-Range Improvements

Improved Economic Incentives. If it is determined that the relatively low rural teacher salaries revealed in this study are the result of low rural-district salary offerings (and not simply a factor of rural districts hiring a disproportionate share of inexperienced and less well-trained teachers), then attention should be given to altering state financial aid programs in a fashion which would improve the earning potential available to rural teachers.

At least a partial step in this direction could be made by instituting a statewide minimum salary schedule for teachers. Such a device, though not guaranteeing that rural districts could match the salary paying potential of the more wealthy school districts, would at least tend to narrow the range of discrepancy between rural and nonrural economic incentives.

Improved Living Conditions. Lack of comfortable living conditions is sometimes given by teachers as a reason for avoiding rural teaching. Modern housing may be difficult to come by, and there is often a lack of colleagues with which to associate in rural communities. These handicaps may operate to discourage high quality teachers from accepting rural positions. This may especially be the case for the recent college graduate with a MA but no spouse; the kind of teacher which currently is attracted to the suburbs where living comfort, age-mates, and eligible marriage partners are more likely to be located.

A partial solution to the problem may be to increase the attractiveness of rural living by providing teachers with modern housing at no cost or at greatly reduced rates. Moreover, by locating such "teacherages" in clusters to serve a fairly extensive geographical area and providing for unmarried teachers, it might be possible to compensate for lack of colleagues and companionship. The concept of the "teacherage" is an old one, but especially for remote and isolated school districts, it appears worthy of investigation as a possible means for increasing the attraction of good teachers.

An alternative which might appear particularly attractive to married males would be to have rural districts make no-interest or low-interest housing loans available to tenured teachers.

Improved "Professional" Environment. The physical remoteness of a rural school can often lead to remoteness from professional activities and continuing educational opportunities for rural teachers. Moreover, it seems reasonable that professional remoteness might be most discouraging to the highest "quality" teachers; individuals interested in the latest research results, the most modern instructional methods, the newest curriculum materials, etc. In short, inadequate opportunities for professional contact may be discouraging the teachers rural districts need most.

A possible solution for the problem of professional contact might be provided in the form of state-sponsored conferences, workshops, and classes on topics relevant to education in rural areas. Such conferences and the like could take place in the fall before school or during Christmas and Easter recesses. They could be held in culturally and geographically desirable locations and conducted by experts from the State and Nation. If teachers' expenses to conferences were paid by the local district or the State such a plan might accomplish two purposes: (1) provide rural teachers with a high level of continuing in-service education, and (2) act as an attractive fringe benefit to induce high quality teachers to come to and remain in rural schools.

Improvement of Recruitment. Rural school districts are often at a distinct disadvantage when it comes to the recruitment of new teachers. Problems of distance and lack of resources seldom allow them to conduct the aggressive recruiting campaigns which are increasingly typical of suburban and urban school districts. Whereas non-rural districts often traverse the State and sometimes the Nation[9] in their quest for good teachers, rural districts are more usually reduced to one or two trips to the nearest teacher training institution. The remainder of their recruiting is of an "armchair" nature, hoping that a capable housewife or an ardent outdoorsman will drop in off the street seeking a teaching position. Consequently, the chances of a rural district employing the graduates of institutions such as Stanford, the University of California, or Harvard are greatly reduced as compared with their non-rural competitors.

Several avenues for more effective recruitment may exist. All of them make the vital assumption that the community and school board involved are desirous of employing better teachers. If such is the case, then thought should be given to establishing multi-district consortia for recruitment purposes. The operation of such consortia would require substantial planning and cooperation. Agreement would have to be reached on the priority of desirable teacher characteristics; authority to hire perhaps would need to be delegated to a multi-district recruitment director, and some agreement upon salaries might be necessary among the districts in a consortium. These and other problems would require time and resources to resolve. Consequently, the State Department of Education might assist by providing the consortia with leadership and resources. It might even be desirable and feasible to grant subventions of State funds to such consortia to enable them to publicize and recruit in the same fashion as non-rural districts. In some instances an entire county might band together for recruitment and use the resources of the County Superintendent of Schools. Short of interdistrict recruitment consortia, improvements might be gained by a degree of centralized recruitment in behalf of rural school districts in the State Department of Education itself.

Short-Range Improvements

A State Teachers Corps. The previous recommendations for action are aimed at improving the ability of rural schools to attract higher quality teachers over the long haul of the future. It is likely that some of the recommended remedies would take two or three years to begin to make significant difference in the recruiting power of rural districts. For example, if teacherages were to be built for rural teachers, their construction time alone would cause an effective lag of several years. Consequently, it would seem that an even more immediate solution is needed for the problem of providing higher quality teachers to rural areas; a solution which could be implemented and achieve results within a short period of time, say six months or a year. Such a solution might be possible in the form of a California Teachers Corps.

The centralized (e.g., State Department of Education) recruitment of a corps of dedicated and idealistic recent college graduates to serve in the less desirable schools of isolated rural communities and inner city ghettoes might begin to compensate for the relative lack of high quality teachers presently in such areas. Centralized recruitment would enable even the most remote school district an opportunity to tap the large manpower pool of the San Francisco and Los Angeles areas. The concept of a "Corps" with a cause--education of the underprivileged--would enable education to benefit from our culture's much underrated wellspring of youthful idealism which has enabled the national Teachers' Corps and the Peace Corps to achieve such dramatic successes.

A host of operational decisions would be required in order to make a State Teachers' Corps successful. Recruiting processes would need to be established which guaranteed participation of local personnel in the selection of volunteers to serve in their districts. Rates of compensation would need to be determined and processing arrangements would need to be developed. Nevertheless, once authorized, the federal government operated Teachers' Corps sprung into actuality in a very few months. California's program would probably be smaller in scope, at least initially, and thus amenable to equally rapid implementation. Moreover, the substantial possibility exists that federal funds would be available (e.g., under the newly enacted Education Professional Development Act) to assist in financing the program.

(All Percentages Statistically Significant at the .01 Level Unless Otherwise Indicated.)

Table 1

POSITION TYPE

	Geographic Category				
	Urban	Suburban	Rural	Small Urban	State Average
Permanent	.664	.609	.519	.591	.598
Probationary	.284	.381	.458	.402	.379
Substitute	.025	.005	.002	.002	.009
Temporary	.020	.004	.004	.002	.008
Over one year contract	.006	.002	.017	.002	.006

CREDENTIAL

	Geographic Category				
	Urban	Suburban	Rural	Small Urban	State Average
General	.776	.781	.786	.776	.780
Administration	.088	.073	.096	.091	.085
Pupil Personnel	.033	.044	.046	.045	.042
Special	.102	.101	.072	.087	.092

Table 2

TYPE OF CREDENTIAL*

	Urban	Suburban	Rural	Small Urban	State Average
Regular	.911	.913	.879	.907	.891
Provisional	.026	.025	.032	.024	.036
Partially Fulfilled	.064	.062	.089	.068	.072

*(Percentages statistically significant at the .05 level.)

Table 3

NUMBER OF YEARS OF TEACHING EXPERIENCE

	Urban	Suburban	Rural	Small Urban	State Average
0 - 5	.342	.393	.374	.355	.370
6 - 10	.235	.237	.215	.210	.227
11 - 15	.180	.180	.198	.203	.188
16 - 20	.123	.119	.124	.117	.121
21 - 25	.051	.041	.042	.059	.046
26 - 30	.037	.014	.022	.028	.024
Over 30	.033	.017	.024	.028	.024

Table 4

Teachers in Suburban and Rural Districts With Ten or Less Years of Experience

Suburban: N = 838 **Rural: N = 529**

	Suburban	Rural
Highest Degree Held:		
B. A.	.722	.766
M. A.	.258	.221
Ph. D or Ed. D	.006	.000
None	.014	.013
Undergraduate Major:		
Education	.348	.374
Academic	.458	.405
Other	.194	.221
Total		
Type of Position:		
Permanent	.444	.353
Probationary	.542	.635
Substitute	.007	.004
Temporary	.005	.006
Over one year contract	.002	.002
Credential Type:		
Regular	.871	.803
Provisional	.035	.055
Partial Fulfillment	.094	.142

Table 5

YEARS OF TEACHING

	Urban	Suburban	Rural	Small Urban
10 years or more	.557	.630	.589	.565
10 years or less	.423	.370	.411	.435

Table 6

AGE

	Urban	Suburban	Rural	Small Urban	State Average
10-19	.001	.000	.000	.000	.000
20-29	.242	.281	.217	.210	.245
30-39	.260	.271	.263	.285	.296
40-49	.288	.258	.267	.297	.273
50-59	.168	.150	.177	.164	.163
60-69	.040	.039	.076	.042	.049
70-79	.000	.001	.000	.002	.001

Table 7

HIGHEST DEGREE HELD

	Urban	Suburban	Rural	Small Urban	State Average
B. A.	.617	.630	.693	.663	.647
M. A.	.350	.343	.284	.325	.328
Ph. D or Ed. D.	.016	.014	.008	.003	.012
None	.017	.012	.016	.009	.014

Table 8

UNDERGRADUATE MAJOR

	Urban	Suburban	Rural	Small Urban	State Average
Education	.314	.331	.384	.339	.341
Academic	.483	.468	.412	.470	.459
Other	.202	.201	.204	.191	.200

Table 9

POSITION

Full Time	.983	.974	.982	.988	.980
Part Time	.017	.026	.018	.012	.020

Table 10

SEX

Male	.386	.403	.448	.442	.399
Female	.614	.597	.552	.558	.601

Table 11

LOCATION OF B. A. DEGREE

	Urban	Suburban	Rural	Small Urban	State Average
California	.604	.569	.565	.549	.574
Other	.378	.420	.420	.439	.412
None	.018	.011	.016	.012	.014

Table 12

GRADUATE WORK

California	.624	.612	.571	.570	.599
Out-of-State	.059	.050	.075	.061	.060
In - Out	.168	.213	.224	.264	.212
None	.149	.126	.130	.105	.129

Table 13

SALARIES BY QUARTILES

	Urban	Suburban	Rural	Small Urban
Q_1	7,320	7,050	6,792	7,200
Q_2(Median)	9,620	9,000	8,150	8,888
Q_3	11,560	10,960	9,800	10,675

FOOTNOTES

[1] Equality of Educational Opportunity (Washington, D.C., U.S. Government Printing Office, 1966). It is of interest to note that the recent criticisms of this study by Henry M. Levin and Samuel Bowles (Journal of Human Resources, winter, 1968) leave unscathed, or even strengthen, the original findings regarding the importance of the teacher in explaining differences in pupil performance.

[2] Senate of the State of California, Report of the Senate Fact Finding Committee on Revenue and Taxation, (Sacramento, March, 1965), p. 56.

[3] Equality of Educational Opportunity, op. cit., p. 16. (Metropolitan is defined by the Census Bureau in this instance to mean a city of over fifty thousand inhabitants. All other areas are defined as nonmetropolitan.) See Footnote 7 for an explanation of the logical relationship between teacher quality and undergraduate major.

[4] Campbell, Allen K., The Politics and Financing of Education; Federal, State, and Local Interaction. (Paper presented to the American Orthopsychiatric Association, Washington, D.C., March, 1967), p. 6.

[5] Initially it was planned to place a school district into one of only three categories, rural, urban, and suburban. However, the existence of towns such as Merced, San Luis Obispo, and Santa Rosa complicated matters. Such municipalities were different than "core cities," but they were too isolated geographically to be labeled as suburbs. Conversely, they did not seem to possess characteristics in keeping with the rural image. Consequently, a fourth category, small urban centers, was created.

[6] In a study conducted by the National Opinion Research Center, Peter Rossi found that persons heading for education are neither the best nor the worst in terms of academic accomplishment--they are close to average. But this finding partly reflects the fact education is a field chosen heavily by women whose academic performance in college is on the average better than that of men. For if we compare educators who are going on to post-graduate work with those from other fields who are going on, then prospective educators are fairly low on the academic performance totem pole. About a third (30.1 percent) of all students going on are in the top fifth of academic performance while only 17.8 percent of the educators fall into this group. (Social Characteristics of 1961 College Graduates Entering the Field of Education, Peter Rossi, NORC, University of Chicago.)

[7] It was impossible to classify approximately 25,000 teacher respondents because of incomplete, missing, or miscoded survey replies. Also, an error in coding was made whereby junior college teachers were included in the sample. A disproportionate number of these teachers were found to be in the rural category. The effect of this mistake was to bias the findings in favor of the rural districts. That is, the more highly qualified junior college teachers tended to raise the "quality" level of all teachers in that category.

[8] Though the percentages are too small to warrant emphasis, it is of interest to note the rural districts also possess the second highest percentage of teachers without any degree (urban, .017, rural, .017, suburban .012, and small urban .009).

APPENDIX G

TEACHER PREPARATION, A SPECIAL CONCERN

Prepared for the
State Committee on Public Education

by
David N. Evans
State Committee on Public Education

Berkeley, California
January, 1968

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APPENDIX G

TEACHER PREPARATION, A SPECIAL CONCERN

By: David N. Evans

It should be the policy of the State Board of Education to seek means that will stimulate California schools of education to work with local school districts to develop new models for the preparation of teachers.

The ideal would be to move from the present single approach, conventionalized pattern of preparing teachers to a recognition that there are many models for training teachers and that a diversity of approaches is not only acceptable but desirable. It must be added that all models should incorporate in their design means of self-assessment and the flexibility to change as new needs and goals are perceived.

At the outset of Part One of its report, the State Committee on Public Education announced its belief that "The school should look upon each pupil as a person of unique distinction, possessing every right to grow and no obligation to be fitted to a mold. Let the schools concentrate on the heart of the matter, which is training pupils to think for themselves."

As a way to accomplish that attitude, the Committee recommended among other things that the State should:

> Encourage colleges and universities to reconstruct their programs for the preparation of teachers according to the best judgment of the institution, in partnership with appropriate school districts in whose classrooms much of the training would take place. The State Board of Education should be empowered to suspend credential requirements for graduates of those institutions submitting acceptable plans. This recommendation aims to train teachers in a variety of ways to match those diverse demands the future is expected to impose upon them.

Teacher training institutions have been unresponsive to this call for leadership. At this time the reason for indifference is unknown. It could be that institutions felt burned by the credential revision dispute that accompanied the Fisher Bill. It could be that local school districts are preoccupied with more immediate matters, and have thus far not seen fit to press the teacher training institutions for action. It may be that the institutions themselves are quite satisfied with their present programs. But we suspect that at least for some of these institutions, none of these explanations is applicable.

Certainly some institutions are dissatisfied with the status quo and certainly some school districts would like to have teachers better prepared. The teaching force is simply not sufficiently prepared for the task which has been thrust upon it, a task which promises to become more difficult in the times ahead.

There is, moreover, a climate for change evident in the peripheral organizations that have spring up, largely through federal support, through the interest of the Legislature to achieve some significant improvements in education, and through intensified interest in such modern developments as internships for teachers and the expanding use of teaching aides, and team teaching. The time is passing, and passing swiftly, in which any teacher can stay in his safe rut and perform at a mediocre rate. The technology and the technique of teaching are changing so fast that it is hardly appropriate any longer to refer to teaching as an "art." It is more and more a science.

The combined forces of new technology, new insight on the learning process, new strategies of instruction will push education administrators to new approaches in the way teaching personnel are distributed and in the demands made upon the individual teacher.

Traditional ways of preparing for this new world of school and classroom do not measure up to the needs. There are a variety of ways to train teachers, and although the present credential regulations can be viewed as an improvement over those which they succeeded, they should not be immune to change. The rules should encourage change to meet the demands of an expanding and diverse world. Rigidity won't do.

There is no reason for school districts or schools of education to close their eyes to or deliberately avoid the need for a continuous self-critical development, assessment, recycling, and redevelopment of the teacher.

Despite the absence of enthusiasm for SCPE's recommendation, the Committee feels that the preparation of teachers for the times is still of prime concern and, if anything, increasingly critical. A voice must be raised again, and new suggestions sought.

Manpower projections considered under Appendix A underscore the urgency of the matter. California has drawn on the other states to fill its teacher needs and has in most years since the end of World War II imported in excess of 40 percent of its annual increase in teaching personnel. If the rate of in-migration diminishes, a vastly higher burden will be placed on the state's colleges and universities.

Recall that the Committee has proposed a network of true laboratory or experimental schools in conjunction with a network of demonstration schools, an idea enthusiastically endorsed by the State Board of Education. It is now suggested that these Demonstration Schools can be centers for preparation of high quality public school teachers.

Effort must be made in these Demonstration Schools to identify the most efficient elements of training processes likely to be effective in providing teachers the tools they need to be effective in the classroom. To do so will not be easy, as one authority in the field warns:

> While it is clear that the teacher and the methods he or she uses are important to the learning process, we cannot say just what it is that the effective teacher is or does.
>
> From what is known, there is no one type of teacher, teaching or classroom organization which produces the "best" results with all students in all areas of academic endeavor.[1]

Another source reports:

> We do not know how to define, prepare for, or measure teacher competence. The bulk of studies on teacher effectiveness to date have produced negligible results.[2]

In the development of teaching as a science it will be important to distinguish outward personality and behavioral patterns from whatever constitutes teaching methods which directly develop and cultivate pupil learning. Doctors are not judged professionally by their bedside manner but by how their patients do. Let the standard for quality teaching, then, be: Does the pupil show a gain? Preliminary research has already started.

B. Othanel Smith, speaking in a colloquy for Pi Lambda Theta, stated:

> ...teacher behavior is focused in two directions: (1) toward the pupil and (2) toward the content. And we are beginning to find out some of the effects of the teacher's behavior toward pupils and his behavior with respect to the content, and to find that these ways function independently of who the teacher is.
>
> These teaching behaviors will not always yield the predicted effects; perfect knowledge is not possible in any field, and certainly not in teaching. But tested ways will be more effective, on the average, than ways left to the wisdom of the individual teachers and administrators.[3]

This kind of research ought to be undertaken in both the Experimental and Demonstration Schools to accumulate evidence of optional ways of training future teachers.

Teacher candidates should be trained in a clinical environment similar to that proposed for Demonstration Schools. Staff for these schools will require extreme care in selection and training. They must be able to work with research specialists in identifying effective teacher behavior, translate these results to their own behavior, demonstrate these techniques to teacher candidates and observe the candidates' performance and criticize it.

Their skill and their training obviously must be well beyond that considered acceptable for regular teaching. The master teacher should be fortified through a well-constructed training program, which, although logically conducted during the summer quarter, should also include release time for freshening of his skill during the year.

It is unlikely that all candidates will receive optimum benefits from a student teaching experience at a like time in their training. Schools of education should be free to experiment in this as in other areas of training. Districts, ESEA Title IV Regional Laboratories, research and development centers and other innovative research programs should join in the effort to improve teacher training.

An Existing Option for Teacher Training Institutions

SCPE's report, Part One, noted that Section 13187.5 of the Education Code, largely ignored, offers opportunities to develop experimental, exploratory, or other pilot programs for the preparation of teachers and administrators. It waives the usual credential requirements for participants. Even schools of education which vigorously opposed enforcement of the Fisher Act appeared to ignore or be indifferent to Section 13187.5 opportunities.

James B. Conant's study of teacher preparation offers a comment. After visiting many institutions he concluded:

> The idea of state certification is so thoroughly accepted that I have found it hard to get a serious discussion of the question: "What would you recommend if there were no state requirements?"[4]

Inquiries to state colleges uncovered a disbelief that the State Department of Education sincerely was seeking optional methods of training teachers. The opinion was asserted that the department felt no involvement with Section 13187.5. If it really favored the section it would vigorously seek to enlist support for it, this opinion held.

The Educational Professions Development Act should be explored as a source of funds for schools of education and local districts which accept the challenge to try new programs of teacher training.

The Internship Act

Internship has been a significant variation in the preparation of teachers. A recent addition to these programs is SB 1479 (Rodda) which passed the Legislature in 1967 and is generally known as the Teacher Education Internship Act of 1967. The intent was to tie together theory and practice in teacher training. It was intended to stir institutions to think realistically about internship and to relate it to the responsibilities faced by California teachers.

The Legislative Counsel's digest explained that it authorizes school districts, in cooperation with public and private universities, colleges, to establish teacher education internship programs restricted to out-of-state recruits. This is the kind of cooperation SCPE considers urgent. Both schools of education and local districts share in teacher training and must keep their lines of communication open.

Internship programs are promising. The State Board of Education should seek expansion of the internship act to include California residents and graduates of California institutions. Districts and schools of education should examine it as a step toward development of experimental programs for interns. It would be logical to conduct all training, pre-service, in-service, and internship within the Demonstration School clinics.

Time for Retraining

More release time for teachers to improve their skills would probably be granted by local districts only if there were the inducement of state assistance to fund it. Properly, release time programs should be weighted to assist the beginning teacher. It is merely the provision of a replacement while the teacher leaves his normal classroom assignment to attend seminars and observe and practice with master teachers (perhaps at the Demonstration-teacher centers).

Release time also comprehends,one, the shift of an experienced teacher from his classroom to demonstrate techniques in the classroom of the new teacher, or two, the use of lately developed micro-teaching packages in combination with the self-analysis provided through use of a videotape recorder.

The Educational Research and Development Center at Stanford University has pioneered this field and programs are currently under development at the Far West Regional Educational Laboratory (an ESEA Title IV agency). First responses to both centers have been positive.

Areas of weakness in teacher preparation which ought to be mentioned are, to list but two: (1) training teachers for the rigors of core area schools and (2) training teachers in effective use of support personnel such as aides. Point one is most critical. Although heavy investments in compensatory education are poured into the central cities, very little is done either to recruit or train teachers for the increasingly difficult problems found there. The second point is important because of a current effort to persuade districts to provide more help to free teachers for their professional responsibilities. At some point in their preparation, teaching candidates should experience, if only through simulation, the organization of work loads for teacher assistants.

FOOTNOTES

[1] Babcock, Sarane S. , Sociology of Education, "Toward a Sociology of Learning: A Selective Review of Existing Research," 1956, p. 40.

[2] Biddle, Bruce J., and Ellena, William J., Contemporary Research on Teacher Effectiveness, (Holt, Rinehart and Winston, New York), 1964, p. 3.

[3] The Evaluation of Teaching: A Report of the Second Pi Lambda Theta Cotera, "The Colloquy," (Pi Lambda Theta, Washington, D. C.) 1967.

[4] Conant, James B., The Education of American Teachers, (McGraw-Hill, New York) 1963, p. 12.

APPENDIX H

FOLLOW THROUGH OF PART ONE

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APPENDIX H

FOLLOW THROUGH OF PART ONE

In response to the State Board of Education's expressed distaste for allowing this to become "just one more report," members of SCPE and its staff have taken a number of steps intended to acquaint more of the public, particularly decision-makers, with its recommendations.

After submission of Part I of its report, the first public hearing on the SCPE program was conducted before the Board at Los Angeles, September 14. At that time the president of the board said: "We should involve both the Legislature and the Executive Branch of the government as this report is brought forward. We have to get into a public discussion of its recommendations." He asked for a series of hearings devoted to aspects of the report.

The first of these dealt with the SCPE proposal to establish networks of both Experimental and Demonstration Schools throughout the state. It was held October 12 at San Francisco, and principal speakers were Chairman Balderston, Dr. William H. Stegeman, assistant superintendent of the San Diego Unified School District, and Dr. Laurel Glass, member of the San Francisco Unified School District's Board of Education. After hearing their testimony in behalf of Experimental Schools, the Board asked Supt. Max Rafferty to direct the State Department of Education staff to work with SCPE staff in preparation of a legislative design for the Experimental-Demonstration networks.

The second presentation concerned Recommendation One, integration of the schools. A substantial number of committee members turned out for the Los Angeles meeting before the State Board of Education, which heard Dr. Alan Wilson of the University of California, Berkeley, and Dr. Thomas Pettigrew of Harvard University, press the SCPE recommendation. Again, the Department of Education was directed to prepare legislation embodying the plan for socio-economic and racial integration.

The third of the series was conducted December 14 at San Francisco and featured Dean John I. Goodlad of the UCLA School of Education, who advocated an overhaul of the teacher training program according to SCPE Recommendation Two. The board directed the SCPE staff to prepare some suggestions. Again, February 8, the Board, now reorganized with four new members, heard Chairman Balderston and Executive Secretary Charles S. Benson describe the case for the Urban Factor--additional help to cities suffering urban decay. Board members asked for more time to familiarize themselves with the recommendation.

It appears that a number of the SCPE proposals are due for legislative airings. The SCPE staff, after joining Department personnel in two conferences, has prepared its own plan for organization of a network of Experimental Schools and Demonstration Schools. This was developed after conferences with Southern California educators organized by Ellis Jarvis, a member of SCPE and with brief discussions with members of the Legislature and educators.

Similarly, a draft of legislation based on a proposal by Alan Wilson was developed after discussions with the Department's Bureau of Intergroup Relations, the Director of

Compensatory Education, and the Commission on Equal Opportunities in Education. Both the Experimental-Demonstration proposal and the integration plan are included with this chapter.

Submission of Part One of the SCPE report stimulated legislative interest in the Committee's work and resulted in much shuttling of SCPE staff between Berkeley and Sacramento. Executive Secretary Benson and Dr. David Evans, research director, either together or singly, met a number of times with representatives of both parties in both houses of the Legislature. Additional consultations were held with representatives of the Office of the Legislative Analyst, the Department of Finance, and the State Department of Education's director of data processing, Alvin Grossman. In addition, the SCPE staff arranged a series of conferences which brought together executives of the five largest California school districts to examine the possibility of special financial aid for central city schools. These five are Long Beach, San Diego, Los Angeles, San Francisco, and Oakland.

Other issues discussed during this phase of staff work included the effective measurement of student progress and the training of teachers, both pre-service and in-service. Evans met with San Diego City School representatives to develop a request for a United States Office of Education grant for a pilot program for training core area teachers.

SCPE would have failed its mission had it not taken pains to communicate its activities to the public. Staff-prepared press releases were distributed through the State Board's publications system for all SCPE reports judged to be of public interest and on the occasion of Committee appearances before the Board. The California news media and such national publications as Education USA reported the Committee's activities. These notices generated demand for SCPE position papers and for Part One of the Committee's report. Two printings of 400 copies each of the report were exhausted, and in the face of continued demand, the California Teachers Association reprinted the document and offered it to the public at cost. Position papers were distributed on demand as long as the supply lasted.

One of the most popular of SCPE's papers was a survey of California public opinion relating to education performed under contract with the Field Research Corporation of San Francisco. Its findings appear as Appendix I.

Proposed Legislation for the Establishment of Experimental and Demonstration Schools

The following structure of a bill for the establishment of Experimental and Demonstration Schools, without chapter references, has been prepared by the staff of the State Committee on Public Education.

Chapter I

It is the intent of the Legislature to:

(a) Establish a network of California Experimental Schools under the direction of a public corporation and, further, to encourage and assist local school districts to develop their own programs of experiment and exploration into problems of education and;

(b) Provide local districts financial aid in the operation of Demonstration Schools, especially for demonstrating the effectiveness of innovative techniques, practices and equipment, particularly those originating in the Experimental Schools.

The objectives of the Experimental Schools are to:

(1) Scrutinize the classroom experience in the public schools, identifying those strengths in school programs which lead to pupil success and identifying causes of failures;

(2) Examine the cost-effectiveness of alternate instructional programs;

(3) Create clinical environments suitable for the experimental approach to the solution of educational problems;

(4) Ascertain the potential for self-sustained learning among pupils of varying aptitudes.

In providing financial assistance for Demonstration Schools, the Legislature seeks to:

(1) Encourage teachers to undertake innovative practices under conditions of rigorous appraisal;

(2) Provide a test platform on which new practices, including those from the Experimental Schools, can be modified for use in conventional schools;

(3) Test the efficient allocation of student and teacher time under different approaches to a variety of instructional activities.

Article I

The state network of Demonstration Schools shall be governed by a public body to be called the Educational Research Corporation of California. The Educational Research Corporation shall be empowered to receive and disburse funds to support the Experimental Schools and to support special projects in applied research in the various school districts. Fiscal responsibility for the Corporation shall rest with the Legislature.

The Corporation shall make decisions concerning construction of the Experimental Schools, and it shall hold title to their physical facilities. It shall, in their design and construction, make every reasonable effort to comply with cost standards established by the Local Assistance Board, except that the standards may be waived as the Corporation, in consultation with administrators of Experimental Schools, seeks to explore various combinations of personal services, materials, and equipment in the conduct of educational programs. Within the limits of cost standards for state buildings, the Corporation shall seek the utmost flexibility in use of instructional space, subject only to California building codes on the safety of occupancy.

The Corporation shall establish guides for the staffing and administration of the Experimental Schools. It shall, in cooperation with local school districts, establish priorities for research projects. Further, it will enter into agreements with local districts for the provision of support services, such as maintenance, supplies and equipment, transportation, and it will also arrange with local districts for the provision of extra-curricular affairs, so that no pupil shall be denied normal opportunities of interschool activities. The Corporation annually shall review the operation of the schools severally and individually, and render a report of their accomplishments to the public.

During the three years after enactment of this measure, Educational Research Corporation funds shall be allocated equally between (a) construction of Experimental Schools and (b) special research projects conducted by local districts. After completion of the third year following enactment of this measure, the allocation shall be 75 percent to the operation and construction of Experimental Schools and 25 percent for the support of special research projects; the Corporation shall entertain and consider proposals for applied research submitted by local school districts and to fund those projects it finds likely to contribute to the objectives outlined above for the Experimental Schools.

The Educational Research Corporation shall consist of 14 members as follows:

(1) A representative of the State Superintendent of Public Instruction. A representative each of the Senate Committee on Education and of the Assembly Committee on Education. A member of the State Board of Education. A representative of the State School Boards Association. Eight members of the public appointed by the State Board of Education to serve four year terms and distributed as follows:

(a) One elementary school teacher, one secondary school teacher, one active member of the Education Writers Association practicing in California, and five citizens selected for their familiarity, standing, competence, attainment, in research methods.

(2) In addition, the superintendents of the districts wherein the boards are located shall select one of their members to represent them in the Corporation and exercise one voting right.

(3) Trustees shall serve without remuneration, but shall be reimbursed for reasonable expenses incurred in the performance of duties.

Article II

Recognizing the dominant contribution of the teacher to academic progress of pupils, the Educational Research Corporation shall give particular attention to the quality of professional staffs in the Experimental Schools. It will assure that all teachers in the state are aware of the opportunity to apply for staff employment, and shall establish appropriate selection procedures in which both the performance of the teacher in the classroom and the subject matter mastery and theoretical knowledge possessed by the teacher shall be weighed.

Appointments shall be for two years, renewable for only two additional years upon agreement of the Corporation and the teacher. Usual tenure rules shall not apply and the teacher, if from within California, shall be deemed to be on leave from his home district, and shall not lose any of the prerequisites he would have maintained or succeeded to had he remained constantly in the employ of that district. Directors of each Experimental School shall be appointed for four years renewable for two years only, and tenure arrangements similar to those for the teachers will obtain.

Teachers shall be employed 11 months of the year, for which they are to receive a salary equal to that they would have received in their home district in the first year of their appointment, plus two-ninths of that salary, plus 10 percent. Teachers joining the Experimental School staffs without previous experience shall receive the state minimum salary for first year teachers, plus two-ninths of that salary, plus 10 percent. Teachers from outside California may be appointed, but must serve without guarantees of tenure or seniority.

Article III

The Educational Research Corporation shall be served by a staff consisting of:

A Director of Experimental Programs
An Assistant Director for Communications
An Assistant Director for Analytical Studies
An Assistant Director for Finance and Administration
An Assistant Director for School Plant Planning
An Assistant Director for Recruitment and Development of Staff
Appropriate clerical assistance.

Each Experimental School shall have a staff consisting of: a Director, an Assistant Director for Research and Administration, and an Assistant Director for Administration, plus appropriate clerical assistance.

Article IV

The budget of each Experimental School shall be prepared by the administrative staff in consultation with all senior teachers in the school and with the advice of the staff of the Corporation and of the local school district. Consistent with the Legislature's intent to provide a clinical setting for applied research, the school staffs are to be accorded the maximum opportunity to determine desirable combinations of teachers, teacher aids, consultants, other instructional personnel, instructional supplies, and equipment. Staffs are encouraged to contract with private or other governmental organizations to provide special instructional services.

Each Experimental School shall develop its annual budget as the first segment of a three-year experimental projection. Final approval of each school budget shall rest with the Corporation.

Article V

The composition of the student body in each Experimental School shall as near as possible be representative of the ethnic and socio-economic characteristics of the regional attendance areas served by the school. Administrators of each school are obligated to inform every parent in the attendance area of the right to apply for admission of their children.

The staff shall, if necessary, pursue vigorous recruitment efforts to make sure that all neighborhoods and socio-ecnomic strata are represented in the student body. Additional transportation costs, if necessary to assure a balanced student mix, should be recognized in the budgets.

Article VI

The network of Experimental Schools shall ultimately serve one percent of all elementary and secondary pupils in the public schools of California, with development priority in the early years of the system placed on the grades from kindergarten to eighth grade. The number of schools in the completed system is to be decided by the Educational Research Corporation and is subject to such variations as the Corporation may consider worthwhile in experimenting with school size as a variable affecting performance.

Chapter II

Each unified school district is authorized to designate as Demonstration Schools institutions serving not in excess of 10 percent of the elementary and 10 percent of the secondary pupils of the district.

Annual budgets for educational programs in these schools shall be approved by the Superintendent of Public Instruction under guidelines prepared by the Department of Education. Where the approved budget for Demonstration Schools exceeds current expenditures per pupil in Average Daily Attendance in the district, the State Department of Education is authorized to allocate additional grants for excess costs, up to $300 per pupil per annum.

An Act to Assist California School Districts to Provide Equal Access to High Quality Education for All Children

I

Grave inadequacies among public school graduates suggest that all California children do not now enjoy education of equal merit, for disparities in achievement exceed differences of individual capacities to achieve.

A shocking number of those possessing high school diplomas have not the skill and knowledge to fill a useful role. One in five lacks even a meaningless diploma, having dropped out of the educational process prior to the twelfth grade. He who is without a skill in the state's technologically driven society stands in tragic contrast to those who share its productive bounty. He is a misfit, ready to proceed through poverty to irresponsibility, and to revolt. Symptoms are in painful evidence in our great cities.

It is crucial to the general welfare and the continued promise of the future that this gross and malignant erosion of human resources be ended.

II

It shall then be the purpose of the people of California that children receive an education of the finest quality and that access to it be guaranteed in equal measure to each, no matter what his religion, race, color, ancestry, socio-economic station, or accident of residence. Since the various school districts are its creatures, it is incumbent upon the state to enforce that guarantee.

For the state to abdicate this power is in effect to condone the opposite course, which is to accord education of greater or lesser quality at random to those who happen to be in the singular position of time and place to receive it.

To do nothing is to perpetuate the present experience in which human and economic disaster and civil discord, if allowed to continue unchecked, threaten the democratic ideal.

III

Therefore the Legislature intends that within any one school district an equal education experience shall prevail for all. This means that the respective school facilities shall be served by administrators and faculties of equal professional proficiency, that the courses of study and the materials therefore shall be of equivalent merit, variety, and range, and that the physical properties shall be comparable.

Bearing in mind that the average level of achievement in any particular school affects academic standards, expectations of teachers and peers, the pace of instruction, and the proportion of class time diminished by behavioral problems, it shall be required that the distribution of educational attainments of the pupils shall be similar for each school.

Educational research indicates that the concentration of pupils from low income, low social class backgrounds disadvantage each other, whereas if these pupils are placed in an educational environment approximating the general characteristic of the district, they tend to perform at a higher level. Research indicates that children from higher income and social class backgrounds and/or who are higher achieving are less dependent upon the school environment.

Therefore, local districts shall prevent concentrations of classes of students and shall seek to mix those of differing race, social and economic backgrounds, and academic attainment according to the general mixture of the district.

The Legislature intends to provide support to the local districts for preparing programs to achieve the need described previously, and to provide additional support for excess costs of approved plans for equalization of the educational program and its extension to all children.

IV

1. Each school district shall tabulate the proportion of pupils at each grade level at each school whose verbal and numerical achievement falls within each decile (a segment consisting of one-tenth of the whole) as measured by the required statewide testing program. Tabulation will be made for at least every third grade level (or age level) in the district and at least one grade or age level at each school.

The tabulations will serve:

a. To stimulate district, staff, and community discussions of the extent of educational inequality and of optional proposals to promote the academic parity.

b. As a baseline against which the local district measures improved equalization or the maintenance of parity between schools.

c. To inform the State Department of Education of those districts in need of assistance to achieve parity, and to establish priorities for financial and consultative assistance to them.

2. The State Board of Education shall require each district identified as harboring substantial disparities between schools to prepare a timed plan for rectifying them.

a. The State Department of Education will offer consultation and assistance in preparation of plans. Local districts will be reimbursed for planning costs.

b. The State Department of Education is authorized to contract with local districts to defray excess costs entailed in accomplishing the plans. These will include assumption of transportation costs, if these are not otherwise provided for by the State's intercession.

c. Local district plans will be reviewed at appropriate intervals, for example at the end of each three year period. The review would ascertain (a) if the district was accomplishing its program according to its approved plan and (b) if the plan was attaining the desired educational goal of reducing the number of pupils leaving the system with defective educations.

APPENDIX I

PUBLIC EDUCATION AND THE DEMOCRATIC IDEAL: A STUDY OF CALIFORNIA PUBLIC OPINION

conducted for the

STATE COMMITTEE ON PUBLIC EDUCATION
of the
STATE OF CALIFORNIA

BY

Field Research Corporation
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Acknowledgement

In recent years research on public attitudes toward schools has occupied the attention of many educators and attitude research scholars. Important among these is the work sponsored by the United States Office of Education, Department of Health, Education and Welfare.

Readers who may have had their interest aroused by our less comprehensive study are encouraged not to forego the benefit of reading from the following examples of this research:

Communities and Their Schools, Richard F. Carter and John Sutthoff (1960); Voters and Their Schools, Richard F. Carter (1960); Between Citizens and Schools, Richard F. Carter and Stephen Chaffee (1966); and the recently published Structure and Process of School Community Relations (5 volumes), Carter, et al (1967); all jointly published by the School of Education and Institute for Communication Research, Stanford University.

In addition, we gladly acknowledge our debt to the excellent procedures and thought which characterize the above work.

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APPENDIX I

INTRODUCTION

The purpose of this survey is to provide the State Committee on Public Education with an objective measure of public attitudes throughout the State of California, by its major geographic sub-districts, on the following broad questions:

1. How does the California public feel today about different goals and tasks commonly associated with schools?

2. How does the public respond to suggested changes in school teaching methods, school administration and subject matter?

3. How does the public feel on other school related matters, such as financing methods, the role of public opinion, and reliance on professional educators' judgment?

Since these questions are indeed broad in terms of the subordinate implications they suggest, various aspects of each area were selected for study in order to remain within the scope of the resources available.

The general plan followed to assess public opinion and judgment of schools contained three main strategies:

a. To isolate, through analytical procedures, those Californians who were consistently critical from those who were consistently supporting in their attitudes and perceptions of public schools in the state.

b. To isolate, through analysis, those Californians who consistently favored changes in educational matters from those who consistently opposed such changes.

c. To describe and compare these major classes of the public on a number of other characteristics, attitudes and behaviors.

This report discusses the analysis and findings in terms of their implications for future planning, and their significance for educational managers as they consider changes toward new methods and ideas in education.

To gather the initial data, interviews were conducted in person, in the homes of a scientifically selected sampling of households throughout the state. In all, 1001 interviews were completed during the period from September 1, 1967 to September 20, 1967, which then constituted a statewide, proportionate cross-section.

A detailed description of the methodology used in both the gathering and the analysis of the survey data will be found in Appendix A.

A copy of the questionnaire and materials is contained in Appendix B.

Most of the analytical tables which were developed are incorporated into the main body of the text. The complete straight run (marginal) tabulations of responses, prior to analysis and cross-tabulation, appear in Appendix C. Additional analytical tables, referred to in the text, are contained in Appendix D.

I. PUBLIC ASSESSMENT OF THE GOALS OF ITS SCHOOLS

General

There are many ways a person can look at his schools, and there are many distinctions he might make based on his own personality and the experience he has had with his own schools. He might have a favorable attitude toward the performance of teachers, and a less favorable attitude toward teaching methods, or toward school administrators. He may be favorable to the idea of new school buildings, but against "frills."

One might imagine all of these and other separate feelings being combined to comprise a "general attitude" of favorability toward schools. But there is another element involved, which is the kind of job the schools are doing. This core idea must be measured because simply adding up the "pieces" of attitudes toward teachers, administration, methods, and buildings does not necessarily equal attitude toward the total educational setting and process which is commonly meant when we talk of "schools."

The public estimate of schools, then, might better be based on a direct measure of those tasks which the public believes schools should perform.

If the public feels the schools perform their tasks well, then related public attitudes about teachers, methods, and administration will probably be favorable because these attitudes are descendants of the amount of satisfaction the public feels about the kind of job the schools are doing. Conversely, improving the teachers' and administrators' "images", would accomplish little if the public remains mostly dissatisfied with the job schools are doing.

For these reasons, it is argued here that the amount of support the public gives to schools and public education arises out of a complex assessment based on two primary considerations:

1. How useful, or important, to the public are the tasks which schools perform?
2. How successful are the schools, judged by the public, in performing these tasks?

Any estimate of how much the public supports its schools must, therefore, include both of these primary considerations. Schools can be criticized for doing too well on tasks which are seen as less important, or they can be criticized for not successfully performing more important tasks. Following this line of reasoning, some people will consistently feel more critical of schools while others may consistently support schools.

The purpose of this section is to discuss how various tasks of schools stand with the public and to separate, for further study, people who are consistently critical from those who consistently support schools.

How School Tasks Stand with the Public

Each respondent was presented with a set of 33 statements describing different tasks or goals which are commonly associated with schools. He rated each task twice: the first time he was asked to rate *how important* he felt each was; the second time he was asked to rate each task on *how successful* he felt schools were in performing it. In this manner each task received an average Importance Score resulting from combining all respondents' judgments; and each task also received an average Success Score. By combining judgments on all tasks an overall (grand) mean for Success and an overall (grand) mean for Importance was computed. Each task was then compared on both Importance and Success against the overall means. Thus, a task which was above average on *Importance and* above average on Success could be described as an important task on which the schools were doing well. A task which scored above average on Importance but below average on Success, could be described as a task where schools needed to improve. If a task was *below* average on *Importance* but *above* average on *Success*, it was described as a task which schools were overemphasizing. The figure below clarifies this classification procedure.

		TASK SUCCESS	
		Low	High
TASK IMPORTANCE	High	NEED TO IMPROVE	DOING WELL
	Low	NON-RELEVANT TASKS	OVER EMPHASIS

The three tables (I-1, I-2, and I-3) which follow show how Californians felt about the various tasks presented to them. The classification-appropriateness scores shown at the right in each table indicate the item's position in its table, i.e., the higher the score the more clearly it belongs in the category.

It is important to remember that "overemphasis" does not mean that an overemphasized task is unimportant by itself; overemphasis simply implies that the school's success with the task is out of step with its importance when compared to other tasks. Table I-2, for example, shows athletics to be overemphasized in the public view. This does not mean that athletics is seen as "unimportant" in an absolute sense, but that schools are seen to do better with athletics than with some tasks considered more important.

While any one of the individual tasks appearing in Tables I-1, I-2, and I-3 could be the focus of interest because of its placement, the analytical approach used also suggests a general pattern in the way Californians view their schools. This pattern can be seen as follows:

First, the public sees the schools doing well in those disciplines which are integrated, quantified, and conceptually formalized into underlying principles, such as mathematics, science, and the basic skills (reading and 3-R's). These are areas where progress is measurable and explicit goals for learning can be set, and where underlying concepts are "teachable."

Table I-1

AREAS WHERE SCHOOLS ARE DOING WELL

Item	Classification appropriateness score
Provide courses in arithmetic and mathematics	3.53
Have courses in social studies--such as history, geography, economics, and government	3.49
Offer science--such as chemistry, physics, and biology	3.44
Have courses in language arts--such as reading, writing, spelling and speaking	3.44
Give pupils a good grounding in the basic tools of learning--the 3-R's	3.34
Schools should keep abreast of the latest teaching methods and administration	3.32
Have instruction in health and hygiene	3.28
Prepare youngsters for college	3.28

Table I-2

AREAS WHICH SCHOOLS ARE FELT TO BE OVEREMPHASIZING

Item	Classification appropriateness score
Offer instruction in games, dancing, and other recreational activities	2.76
Provide art study	2.60
Provide physical education and athletics	2.59
Offer music studies	2.57
Provide driver education	2.56
Provide instruction in home economics--cooking, diet, sewing, homemaking	2.48
Offer manual arts training--like wood shop and metal shop	2.47
Have courses in California history and current state problems	2.41
Provide literature study	2.39
Give homework	2.37

Table I-3

AREAS WHERE SCHOOLS NEED TO IMPROVE

Item	Classification appropriateness score
Provide pupils with the facts about drugs, alcohol, and tobacco	3.07
Give special help to pupils who have emotional problems and need psychological guidance	3.04
Give each pupil an opportunity to develop his abilities to the fullest	3.03
Have instruction in tolerance and the importance of learning how to live in the world with others	3.02
Encourage pupils to think for themselves and form their own decisions	3.01
Encourage pupils to have an inquiring mind and develop their desire to learn	3.00
Develop students' ability to cope with new situations . .	2.97
Provide instruction in morality and a knowledge of right and wrong	2.95
Help pupils to understand and appreciate the American way of life and to be loyal to its ideals	2.95
Encourage personal ambition and a desire to better oneself	2.93
Have instruction in the rights and duties of citizenship	2.91
Provide vocational and job training for business and industry	2.89
Develop self-expression and creativity in pupils . . .	2.87

Secondly, the schools are seen to overemphasize those areas which do not descend from an integrated and formalized body of knowledge, but which are still (to a great extent) teachable, such as driving, cooking, athletics and the arts. Thus, schools are seen to be engaged in presenting a variety of courses where the content lends itself to professional teaching methods, and, by implication, where there is a chance for learning goals to be realized. This would all seem natural enough, except that in the public view some courses are simply felt to be more important than others, and the more important ones seem to be characterized by an undergirth of formal conceptual principles.

This point is made even more clear by an examination of important tasks where the public feels schools need to improve (Table I-3). Here the majority of tasks, such as developing inquiring minds of independent thought, developing responsible socialized attitudes in students, or developing minds able to cope with change and complexity, are not the descendants of an integrated and formalized body of knowledge or technique, nor are they substantive and concrete, nor do they lend themselves well to current teaching methods. In short, they are worthy tasks which few, if any, educators know how to accomplish. While this shortcoming can be explained by citing limitations in the current teaching art, in the public view these traits are still considered important tasks of schools. And, by implication, are tasks which would receive public support. Of course, whether or not the public would be willing to divert for example, research funds from relatively well proven areas of teaching (e.g. reading) to research in a more difficult area such as the "developing of an inquiring mind," is a matter requiring further study. The findings here are only suggestive, and recommendations going too far beyond our data would not be warranted.

Critics and Supporters

At the beginning of this section it was observed that some people may be more consistently critical of schools than others, and that some may more consistently support schools than others. The analytical approach to separating these groups is based on the same considerations used before: the perceived importance of various school tasks, and the judged success of schools in accomplishing them.

Thus, a Supporter of public schools would be a person who consistently felt that schools were successful in performing tasks. Moreover, if a school had to sacrifice performance because it could not do everything, a "good" school would be seen, by a Supporter, to cut back in those areas which he felt were less important anyway. Thus, the Supporter of schools can be identified not only by his feeling that schools are doing well in important areas, but also by his feeling that they are, appropriately, doing less well in the unimportant areas.

By the converse of this argument, a Critic of schools would be a person who consistently felt that schools were failing to succeed on important tasks, and were succeeding too well with unimportant tasks.

In practice, of course, a person could be judged a critic on one task and a supporter on the basis of another. Consequently, to isolate these groups for further study, each respondent was classified on the way he scored all 33 tasks on Importance and the schools' Success. His combined Importance Score was compared against the mean for all respondents, and his combined Success Score was also compared against the mean for all respondents. Where any respondent stood, in relation to all other respondents, on all 33 tasks yielded his summary School Support Score.* Low Support Scores were given to those respondents who more consistently viewed the schools as failing in important tasks and/or succeeding in unimportant tasks. High Support Scores were made by those who consistently felt schools were succeeding in important tasks and/or doing less well in the unimportant ones. The figure below shows graphically this basis for separation:

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*For a detailed description of score derivation see Appendix A.

		"SUCCESS" JUDGMENT	
		Low	High
"IMPORTANCE" JUDGMENT	High	CRITICS	SUPPORTERS
	Low	SUPPORTERS	CRITICS

How School Tasks Are Evaluated by Critics and Supporters

In Table I-4a, 4b, and 4c, people are divided into Critics and Supporters by dividing the distribution of Support Scores at the mean.

NOTE: In later analyses in this report, allowance will be made for a middle range group who were not strong in either direction, called "Inbetweens". But for the purpose of re-examining the tasks shown earlier in Tables I-1, I-2, and I-3; the simpler, Critic vs. Supporter dichotomy was used.

For the purpose of looking again at the various school tasks, it was hypothesized that "Critics" and "Supporters" might view the tasks differently, and it was hoped in this manner to determine some specific reasons for criticism and support by Critics and Supporters. In other words, a "test" on tasks might determine whether a person's view of specific tasks makes him a Critic or a Supporter, or whether it is some more general attitude requiring more examination.

In Table I-4a, the school tasks appear as viewed by Critics and Supporters in areas where schools are doing well. It was found that the task of giving pupils the basis skills (3-R's) was felt by Supporters to be successfully accomplished, but not by Critics, since it does not appear in the Critic's column. Otherwise the two groups agree generally on school performance. As might be expected, of course, Supporters feel somewhat more definitely positive, as revealed by the systematically higher task scores.

The results in Table I-4b show tasks which the public feels schools are overemphasizing. Here it can be seen that Supporters and Critics agree on the specific items, but that they do not rank all the tasks the same way. For example, Critics and Supporters reverse the order for Athletics and Art: Critics are less likely to feel Art and Music Study are overemphasized, and more likely to feel that Athletics is overemphasized. This is consistent with the finding in Table I-4a that Critics did not think that schools were doing as well with the 3-R's as Supporters did.

While these findings may suggest a kind of "academic" or cultural orientation by Critics, the inference cannot be strongly supported because both groups are strong in academic orientation and both feel that non-academic or skill tasks may be overemphasized by schools. The Critics, however, appear here to feel slightly more strongly that some non-academic tasks are overemphasized than Supporters do.

Table I-4a

AREAS WHERE SCHOOLS ARE DOING WELL, COMPARING SUPPORTERS WITH CRITICS

Item	Critics	Item	Supporters
Provide courses in arithmetic and mathematics . . .	3.36	Provide courses in arithmetic and mathematics . . .	3.70
Have courses in social studies--such as history, geography, economics and government . .	3.35	Have courses in social studies--such as history, geography, economics and government . .	3.63
Offer science--such as chemistry, physics and biology . .	3.33	Have courses in language arts--such as reading, writing, spelling and speaking	3.62
Have courses in language arts--such as reading, writing, spelling and speaking	3.26	Offer science--such as chemistry, physics and biology . .	3.55
Have instruction in health and hygiene	3.17	Give pupils a good grounding in the basic tools of learning--the 3-R's	3.53
Schools should keep abreast of the latest teaching methods and administration	3.16	Schools should keep abreast of the latest teaching methods and administration	3.49
Prepare youngsters for college .	3.12	Prepare youngsters for college .	3.45
		Have instruction in health and hygiene	3.40

Table I-4b

AREAS WHICH SCHOOLS ARE FELT TO BE OVEREMPHASIZING, COMPARING SUPPORTERS WITH CRITICS

Item	Critics	Item	Supporters
Offer instruction in games, dancing, and other recreational activities	2.74	Offer instruction in games, dancing, and other recreational activities	2.80
Provide physical education and athletics	2.55	Provide art study	2.67
Provide art study	2.52	Offer music studies	2.64
Offer music studies	2.49	Provide physical education and athletics	2.61
Provide driver education	2.49	Provide driver education	2.59
Offer manual arts training like wood shop and metal shop	2.42	Provide instruction in home economics--cooking, diet, sewing, homemaking	2.52
Provide instruction in home economics--cooking, diet, sewing, homemaking	2.42	Offer manual arts training--like wood shop and metal shop	2.51
Have courses in California history and current state problems	2.35	Provide literature study	2.50
Provide literature study	2.27	Give homework	2.47
Give homework	2.24	Have courses in California history and current state problems	2.46

Table I-4c

AREAS WHERE SCHOOLS NEED TO IMPROVE, COMPARING SUPPORTERS WITH CRITICS

Item	Critics	Item	Supporters
Give special help to pupils who have emotional problems and need psychological guidance	3.20	Provide pupils with the facts about drugs, alcohol and tobacco	2.96
Provide pupils with the facts about drugs, alcohol and tobacco	3.19	Give special help to pupils who have emotional problems and need psychological guidance	2.90
Give each pupil an opportunity to develop his abilities to the fullest	3.18	Give each pupil an opportunity to develop his abilities to the fullest	2.90
Encourage pupils to think for themselves and form their own decisions	3.17	Have instruction in tolerance and the importance of learning how to live in the world with others	2.89
Encourage pupils to have an inquiring mind and develop their desire to learn	3.17	Develop students' ability to cope with new situations	2.88
Have instruction in tolerance and the importance of learning how to live in the world with others	3.15	Provide instruction in morality and a knowledge of right and wrong	2.87
Develop students' ability to cope with new situations	3.08	Help pupils to understand and appreciate the American way of life and to be loyal to its ideals	2.87
Give pupils a good grounding in the basic tools of learning the 3-R's	3.06	Encourage pupils to think for themselves and form their own decisions	2.87
Help pupils to understand and appreciate the American way of life and to be loyal to its ideals	3.05	Encourage pupils to have an inquiring mind and develop their desire to learn	2.84
Encourage personal ambition and a desire to better oneself	3.03	Encourage personal ambition and a desire to better oneself	2.83
Have instruction in the rights and duties of citizenship	3.03	Provide vocational and job training for business and industry	2.81
Develop self-expression and creativity in pupils	2.98	Have instruction in the rights and duties of citizenship	2.80
Provide vocational and job training for business and industry	2.97	Develop self-expression and creativity in pupils	2.78

In Table I-4c, areas for improvement, again there is substantial agreement except that, as expected, Critics feel that an important task where improvement is needed is providing basic tools (3-R's), while Supporters do not feel this way. There is one other finding where the tasks do not correspond: Supporters feel that schools need to improve in instructing students in morality, while Critics do not feel this is an important school task at all.

The data in Tables I-4a, 4b, 4c, taken together show that Critics and Supporters feel substantially the same way about school tasks with the exceptions that Critics do not feel teaching morality is a school task, and they do feel that schools need to improve the teaching of the 3-R's. If one assumes that the issues of morality are seen by Critics to be a family matter, or a task for parents, then the Critic might be described as more generally conservative than the consistent Supporter, but there are no data, save inferences, to strengthen such a conclusion.

The real difference lies in the degree of feeling which these two groups have toward schools. The Supporter is more definitely positive overall. If both Critics and Supporters see schools as failing in certain tasks, the Supporter is inclined to see less failure. If both agree on important tasks where schools are doing well already, the Supporter feels schools are doing better than the Critic feels they are. Aside from the exception of 3-R's previously noted, the classifications of Critic and Supporter are strengthened as "types of people". In other words, it is not on specific tasks where there is disagreement, it is an overall attitude of greater satisfaction with the job schools are doing, by the Supporter, that makes him different from the Critic.

It is one of the functions of this research to discover, if possible, what factors explain this more supporting orientation, and, by contrast, what other factors (since it is not specific tasks of schools), might explain a consistently critical attitude toward public education. It is felt that within the scope of determining the public's attitudes toward public schools it is most essential for those administering public education to understand better the nature of school support and criticism. For this reason much of the remainder of the report will focus on the differences among Critics, Inbetweens and Supporters, by examining many of the differences in their characteristics, other attitudes, and behavior.

Characteristics of Critics and Supporters

It has been found that some people are generally more critical of schools than others, and that this is a general attitude not specific to any particular set of tasks which schools perform.

Table I-5, shows some demographic characteristics of respondents who were classified into three main groups on the basis of their School Support Scores. Three groups were used because it was felt that allowance should be made for a neutral group which contained neither strong Critics nor strong Supporters, i.e., those who were somewhere inbetween.

The "Statewide" proportions in Table I-5 show that the divisions of the Support Score distribution resulted in three groups with nearly 1/3 of the sample in each:

Critics - 32%
Inbetweens - 36%
Supporters - 32%

By reading down the columns of Critics, Inbetweens, Supporters in Table I-5, departures from these overall statewide norms can be seen.

Table I-5

% CRITICS AND SUPPORTERS, BY DEMOGRAPHIC CHARACTERISTICS

	Base	Critics	Inbetween	Supporters
Statewide	1001	32%	36	32
S. F. Bay Area	238	29%	40	31
Other Northern California	196	28%	39	33
L. A. - Orange Counties	448	37%	32	31
San Diego County	67	25%	32	43
Other Southern California	52	31%	42	27
Sex:				
Male	498	33%	37	30
Female	503	32%	34	34
Race:				
White	900	31%	36	33
Negro	63	49%	22	29
Other	36	39%	44	17
Income:				
Under $3,000	72	35%	42	23
$3,000 - $4,999	80	29%	32	39
$5,000 - $6,999	155	33%	36	31
$7,000 - $9,999	248	31%	35	34
$10,000 - $14,999	258	32%	36	32
$15,000 and over	138	34%	34	32
Refused	50	32%	42	26
School experience:				
Children in public school	469	31%	33	36
No child in public school	532	33%	38	28
Child in private school	91	32%	39	30
No child in private school	910	32%	35	33
Child in grade K-4	297	31%	36	33
Child in grade 5-8	261	32%	31	37
Child in grade 9-12	221	28%	36	36
Child in any school, last 5 years	61	25%	39	36
No child in school, last 5 years	141	34%	39	27
Respondent attended public school	926	32%	35	33
Respondent attended other	181	39%	31	30
Repondent attended public school in California	461	32%	35	33
Respondent did not attend public school in California	459	32%	35	33
Median age	1001	38 yr.	45 yr.	38 yr.
Tenure:				
Own home	631	30%	37	33
Rent	390	31%	29	40
School voting frequency:				
Last year	506	35%	33	32
1-2 years ago	166	34%	30	36
3-5 years ago	69	27%	44	29
Never	177	28%	39	33
Education:				
8th or less	103	25%	49	26
9-11	138	32%	37	31
Graduated high school	306	29%	37	34
Some college or technical	203	34%	34	32
Graduated college	151	40%	30	30
Post BA, BS schooling	100	34%	30	36

It can be seen from Table I-5 that with only a few important exceptions, whether or not a Californian is a Critic or Supporter of public schools cannot easily be determined by his particular situation in life as it is described in demographic characteristics. That is, the proportions of Critics to Undecideds to Supporters do not depart much, looking down the columns, from the Statewide norms at the top.

The exceptions when they are strong, seem consistent within common sense predictions. For example, Negroes are much more likely to be Critics (49%) than Supporters (29%). But Whites are about as likely to be Supporters (33%) as they are Critics (31%). However, if it is remembered that variations are slight, or not dramatic to begin with, a pattern based on tendency and inclination rather than on strong findings can be discerned:

1. Los Angeles and Orange Counties have a greater proportion of Critics (37%) than San Francisco (29%) and Northern California (28%) have. But neither area has as great a share of Supporters as San Diego, which has many more Supporters (43%) than Critics (25%).

   For purposes of generalization, these tendencies might be interpreted as follows: The non-urban areas of Northern and Southern California are quite similar in comparison to the statewide norms with Southern California (27%) having fewer Supporters and Northern California having slightly fewer Critics (28%).

   In the urban areas, Los Angeles-Orange has a greater proportion of Critics (37%), the San Francisco Bay Area a greater proportion of Inbetweens (40%), and the San Diego area a greater proportion of Supporters (43%).

   In terms of gaining popular support for education, this finding is discouraging since it suggests that urbanized population size is related negatively to Support for Schools. The largest populated urban area tends to have a higher share of Critics; the next largest urban area has more Inbetweens, and the least heavily populated urban areas, more Supporters.

2. Persons with youngsters in school, public or private, are more likely to be Supporters (36%) than are persons who have no children in school (27%), and conversely, those with youngsters in school are less likely to be Critics (25%) than those without (34%).

3. Further differences are related to the grade the child is in. Parents of 5th graders and above are more likely to be above average Supporters than parents of children in grades below the 5th.

4. Critics and Supporters do not differ in age, which seems to confound the popular stereotype that older people are more likely to be Critics of schools.

5. On matters related to voting in school elections, the data suggest that voting patterns have recently become characterized by a somewhat diminishing likelihood of Supporter participation and an increase likelihood of Critic participation.

   This inference is suggested by the finding that more Critics voted last year than Supporters (35% vs. 32%), while in elections 1-2 years ago slightly more Supporters (36%) than Critics (34%) voted. The differences are small, and further study here would be required to determine whether this effect results from voters becoming more critical, or from an increased turnout of Critics at election accompanied by a decreasing turnout of Supporters.

6. College graduates are above average as Critics (40%) and below average as Supporters (30%), but people with post graduate training or advanced degrees are above average as Supporters (36%) and about average as Critics (34%).

Considered overall, these slight tendencies seem to portray the "typical" Critic as a person with younger children in school (below the 5th grade), probably a college graduate who has not chosen to take post graduate courses, and who lives in heavily populated urban areas of Southern California.

The "typical" Supporter tends to be a person with post graduate training and older children in school, 5th grade or above, who lives in a smaller urban area, in this case San Diego.

The disparity in the geographic distribution of Critics and Supporters is a provocative finding. If he lives in San Diego he supports schools generally; if he lives in Los Angeles he does not; if in the San Francisco Bay he is ambivalent. It can be theorized that attitudes of school support come partly from an individual's personality and partly from his experience with schools. While his personality might also determine whether or not he seeks post-graduate schooling, his experience is determined by his child's experience in schools, which are geographically fixed. Although it might be argued that the personality variables of consistent school Supporters somehow operate to take Supporters to San Diego, this seems too subtle for the explanation required. Rather, it would seem more likely that the heterogeneity of students in schools of densely populated urban centers and the variety of needs and problems which these students bring prevent schools from satisfying the expectations the public has. Thus there are more Critics in these areas.

While it is suggested here that the relationships and problems of schools and the public in densely populated urban centers is a matter for further research, further analysis of the attitudes of Critics and Supporters will be pursued in this report.

II. PUBLIC RESPONSE TO CHANGES IN SCHOOLS

General

In planning for the future, educators are inevitably faced with the task of placing new proposals either before the public or before its elected representatives. Consequently, one of the study aims was to determine what kinds of proposals might be most favorably viewed, and to determine what kinds of people support such changes and what kinds of people oppose them.

How Proposals for Change are Received by the Public

Each respondent was presented with a set of 16 different proposals which he rated twice. The first time he was asked to state how favorably he felt about each proposal; the second time he was asked to rate how urgently needed he felt it was. These two scores for each respondent on each proposal then were combined and averaged to form a "Receptivity" score. The overall (grand) mean receptivity score for all respondents over all proposals was 2.80 out of a maximum of 4.

The different proposals were next divided at the overall mean in order to separate the issues into "well received" and "less well received" categories. Table II-1 presents those proposals which received higher receptivity scores from respondents. In examining the proposals in Table II-1, it is clear that the public is most receptive to the idea of equality of available money for all public schools. Reception of other proposals, such as support for special programs for children with learning problems, and letting children progress at individual rates, suggests that the public is showing general support for the idea put forth by James B. Conant* of "equality of educational opportunity." The other well-received proposals in Table II-1 support the idea of removing the obstacles to achieving equal educational opportunity, for example, statewide achievement tests to maintain standards in schools and support for research on new teaching methods.

The best-received proposals thus seem to address the democratic ideal of equal opportunity. However, those which receive lower reception scores, presented in Table II-2, seem to deal with more specific plans which have been mentioned by educators from time to time.

Table II-2 shows that apparently "radical" plans, such as doing away with grade level grouping, equalizing racial balance, and either doing away with or increasing local control by making it more free from state control, are not well received. It will be noted that some specific proposals in Table II-2 that are not well received may in fact implement programs directed toward the democratic ideals that are supported in general. This highlights the inherent problem of administering change: the connection between specific proposal and ideal objective is often not clear. For example, while doing away with grade levels in favor of interest groupings may be argued to improve equality of opportunity, the connection seems to be a difficult one for respondents to make. By contrast, the one specific proposal which was more well received than the others in Table II-2 (but still below the overall average) was that dealing with the centralizing of a school district's facilities. Here the connection with equality of opportunity seems less tenuous, and, consequently, it was not rejected as frequently by respondents.

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*John P. Gilbert, letter to editor, SCIENCE magazine, 16 June 1967, p. 1435.

Table II-1

MOST WELL-RECEIVED PROPOSALS, BY RECEPTION SCORES

Item	Mean reception score
Make sure that schools in the poorest districts have the same amount of money to spend (per pupil) for buildings, books, salaries and so on as schools in the richest districts	3.62
Let each student progress as rapidly as he can in each subject .	3.32
Spend additional money to provide special teachers and smaller classes for minority group children with learning problems . .	3.32
Arrange education programs so that pupils who move to a new area can pick up right where they left off in the old school . . .	3.25
Spend additional money on developing a better educational system for the future. That is, spend time and effort on research and experimentation with new methods	3.23
Have statewide achievement tests for elementary and high school students in order to help maintain standards in California schools	3.06
Change requirements for state licensing of teachers ("teaching credentials") in certain cases so colleges and universities could test new ways of training teachers	3.00
Provide additional school funds for large cities (like San Francisco, San Diego and Los Angeles) so they can better solve their special educational problems	2.81

It would appear from these findings that bridging the gap between specific plans and broad objectives might be the most important task of those who seek public support for changes in education. The more distant the connection is, the more difficult it will be to achieve acceptance.

Characteristics of Opponents and Advocates for Change

Some people might seem generally more receptive to change than others, and it was upon such a premise that the analysis which follows was carried out. For the purpose of examining different characteristics of Californians by their receptivity to change, respondents were assigned "Advocacy of Change" scores*. These scores were derived from each respondent's combined favorability and urgency ratings on all 16 proposals. Advocacy of change scores were then distributed along the range from low to high, and divided into three groups. Those who had low scores were classified as "Opponents of change"; those who had scores around the mean were called "Undecideds"; and those whose scores were well above the mean were called "Advocates of change".

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*For detailed description of score derivation see Appendix A.

Table II-2

LESS WELL-RECEIVED PROPOSALS BY RECEPTION SCORES

Item	Mean reception score
Centralize a school district's facilities, buildings, and teachers in one place to give students the benefit of more flexible programs, specialized help and advanced teaching equipment	2.77
Develop some evening instruction by TV, so parents can actively participate in part of their child's education	2.74
Change the laws for physical education scheduling (but not decrease total amount), when it interferes with classroom scheduling	2.65
Teach some classes in Spanish to Mexican-American children	2.51
Change laws so that local schools have more freedom from state control	2.46
Equalize the racial balance in each public school within a given area	2.35
Do away with local control of schools by school boards and have stronger state control	1.95
Do away with grade levels (like 1st grade, 2nd grade, 10th grade, etc.) and group students by their interests	1.91

Table II-3 shows the geographic and demographic characteristics of these three groups. The "Statewide" row (across) shows the percentages that resulted from the three-way division to be about even thirds. By reading Table II-3 down the columns, departures from the overall statewide norms can be seen.

Table II-3 shows that on most characteristics various subgroups of respondents do not differ greatly from the statewide norms. However, there are several characteristics which do show important differences:

1. Negroes are seen to be more likely to be Advocates of change (60%) than are White people (31%).

2. Persons with children in high school (40%) or those whose children have recently finished school (39%) are slightly more likely to be Opponents of change than those with younger children in school (34%). It is also true that persons whose children are in high school or are out of school, are older, and it should be pointed out that the findings here suggest that older persons were also inclined to be Opponents of change.

3. Geographically, the differences from statewide norms were found to be slight. San Francisco Bay Area respondents were 6% less likely to be Opponents, but were similar in advocacy to Los Angeles and Orange County

Table II -3

OPPONENTS-ADVOCATES OF CHANGE, BY DEMOGRAPHIC CHARACTERISTICS

	Base	Opponents	Undecided	Advocates
Statewide	1001	34%	33	33
S. F. Bay Area	238	28%	36	36
Other Northern California	196	37%	41	22
L. A. - Orange Counties	448	35%	29	36
San Diego County	67	33%	33	34
Other Southern California	52	38%	29	33
Sex:				
Male	498	35%	34	31
Female	503	33%	32	35
Race:				
White	900	36%	33	31
Negro	63	16%	24	60
Other	36	22%	42	36
Income:				
Under $3,000	72	21%	31	48
$3,000 - $4,999	80	24%	25	51
$5,000 - $6,999	155	22%	34	44
$7,000 - $9,999	248	33%	37	30
$10,000 - $14,999	258	41%	33	26
$15,000 and over	138	49%	28	23
Refused	50	30%	42	28
School experience:				
Children in public school	469	35%	35	30
No child in public school	532	32%	32	36
Child in private school	91	36%	38	26
No child in private school	910	33%	33	34
Child in grade K-4	297	33%	35	32
Child in grade 5-8	261	34%	38	28
Child in grade 9-12	221	40%	34	26
Child in any school, last 5 years	61	39%	26	35
No child in school, last 5 years	141	38%	28	34
Respondent attended public school	926	36%	29	35
Respondent attended other	181	35%	27	38
Respondent attended public school in California	461	35%	32	33
Median age	1001	45 yr.	38 yr.	38 yr.
Tenure:				
Own home	631	40%	32	28
Rent	390	20%	43	37
Education:				
8th or less	103	27%	39	34
9-11	138	29%	31	40
Graduated high school	306	37%	30	33
Some college or technical	203	33%	34	33
Graduated college	151	36%	33	31
Post BA, BS schooling	100	33%	38	29

respondents (36%). The geographic differences, while slight, are most easily explained by the fact that respondents from the highly urbanized areas of the state are less likely to be Opponents and are slightly more likely to be Advocates of change than those respondents from non-urban, or semi-rural areas.

4. Adults who did not finish high school are more likely (40%) to be Advocates of change, while high school graduates are slightly more likely (37%) to be Opponents of change, as are college graduates (36%). Those who have gone for post graduate or advanced degrees are slightly more likely (38%) to be undecided. Those with no high school, however, are also a little more likely (39%) to be Undecideds. Interestingly, indecision is greater among those with the most or the least education than it is among the rest of the public. We can speculate that in the former case, highly educated people see more complexities, while in the latter case those with little education are reflecting an inability to conceptualize the problem or inexperience in dealing with it.

5. Homeowners are more likely (40%) to be Opponents of change, while those who rent are more likely to be either undecided (43%) or advocates (37%).

6. The most consistent and important finding is that income was found to be negatively related to approval of change. Persons with higher incomes are more likely to be Opponents of change (49%) and less likely to be Advocates (23%), while persons with low incomes are more likely to be Advocates (50%) and less likely to be Opponents (23%).

This last finding is considered important because of the obvious desirability of having affluent persons interested in educational improvement. Since it has considerable political import for schools, this relationship is suggested as a candidate for future research.

On the basis of this limited study, any explanation for these findings which attempted to relate higher income--college graduate-homeowners--to opposition to democratic ideals simply because of scores achieved on test proposals which seemed to be aligned democratically, is not appropriate. Much more investigation and analysis would be required to focus on other factors such as political and social orientation, before any general connections, if present, could be established.

III. RELATIONSHIP OF SCHOOL SUPPORT OR CRITICISM TO ADVOCACY OR OPPOSITION

Previous sections have reported how various school tasks are judged by the public and how some proposals for change have been received. In addition, Critics/Supporters, and Advocates/Opponents of change have been described by demographic characteristics. It is the purpose of this section to examine the relationship between an individual's degree of support for schools and the degree to which he would agree to change the present system. The question might be asked: Are Supporters of the schools generally opposed to changes in them? and, Do critics of schools advocate changes?

By way of review before beginning this analysis, it will be recalled that in Section I, it was shown that Critics and Supporters do not disagree so much over the kinds of things schools should teach, as they differ on the degree of success they feel schools are having in teaching them. Both groups feel schools need to improve, but generally in the extremely difficult areas of motivation and trait inspiration--areas where current behavioral theory and education are most complex and incomplete.

In Section II it was found that proposals for change which moved in the direction of democratic norms were more widely endorsed--equal educational opportunity was the applicable overall description for endorsed proposals. At the same time, unfamiliar plans, or those which would not be easily related by respondents to equal educational opportunity, tended to be rejected. In both sections, some implications for gaining public support by those interested in education were set out.

In this section as well, the emphasis will be upon the implications of the relationship. Although, as Table III-1 shows, the relationship is not strong, there are still aspects of it that are worthy of discussion.

Table III-1

CRITICS AND SUPPORTERS BY ADVOCACY OF CHANGE

	Critics	Inbetween	Supporters	Total
Advocates	12% (1)	9% (2)	12% (3)	33%
Undecideds	11% (4)	13% (5)	10% (6)	34%
Opponents	9% (7)	14% (8)	10% (9)	33%
Total	32%	36%	32%	100% (base: 1001)

Table III-1 shows first that Critics as well as Supporters are more likely to be change Advocates than Opponents, but only slightly [Cells (1) vs. (7) and (3) vs. (9)].

Those Inbetween are more interesting in that they are more likely to be Opponents or Undecided than Advocates of change [Cells (8), (5) vs. (2)]. The conclusion from this seems to be that people who are ambivalent about their support for schools are not only often undecided about change, but they are more likely to oppose it than to support it when they have an opinion.

In seeking public support for schools and education, this finding suggests that the uninvolved citizens, i.e., those without either strong critical or supportive feelings, may not only be hard to reach with information, but also somewhat predisposed against change to start with.

In addition, the nine different groups in Table III-1 were each examined by demographic characteristics. Since only slight differences were found these are not discussed in the text of this report, but they can be found in Appendix D (Table D-1).

IV. PUBLIC ATTITUDES AND BEHAVIOR TOWARD SELECTED ASPECTS OF PUBLIC SCHOOLS

General

In this section a number of ratings will be discussed. These simple definitional scales, or indexes, were developed primarily to use in a further analysis of School Support and Change Advocacy in Sections V and VI which follow, but since they are in themselves of interest in assessing public attitudes toward education, they are set forth here individually. These ratings address:

1. Degree of Participation in School Affairs
2. Degree of Reliance on Public vs. Professional Opinion
3. Degree of Perceived Effectiveness of Public Opinion

NOTE: It is important to keep in mind in this section that the scales developed are relative rankings of Californians with respect to the average responses given by the public as a whole to different questions. For example, those who appear to be higher than average in participation are called "High"; those who are lower than the average public-response are called "Low." The reader is cautioned to interpret "High" and "Low" Participation only as "more than average" and "less than average," and not to impute any absolute values to these terms. The proportions of respondents who are reported to belong in the different groups are not equal because, on a statewide basis, more respondents achieved scores near the extreme end of the scoring system. Finally, these scales are designed to separate respondents in a grossly representative way for other comparisons. The technical aspects of how these indexes were derived can be found in Appendix C.

Participation in School Affairs

Some people seem to be more active in school affairs than others. In order to determine to what extent this participation varied, respondents were asked five questions about attendance at school functions, membership in PTA, and discussions with teachers or neighbors about school matters. From these a summary score was assigned to each respondent which indicated his degree of participation. The range covers five intervals from what might be considered: not at all to very often.

The distribution of these scores was then trichotomized around the mean in order to divide respondents into three reliable and representative levels of participation: Low, Medium, and High participation. The shape of this distribution indicates that Californians see themselves as more active than not, as shown in Table IV-1.

Table IV-1

% RESPONDENTS, BY DEGREE OF PARTICIPATION

High	Medium	Low	Total
35%	43%	22%	100%
			(base: 1001)

The figures in Table IV-1 are statewide "norms" for participation against which respondents can be examined by other characteristics.

Characteristics of Participation

Table IV-2 shows the demographic characteristics of participation in school affairs. By reading down the columns of High, Medium, and Low participation, departures from the statewide norms at the top can be seen.

Table IV-2

% RESPONDENTS BY DEGREE OF PARTICIPATION IN SCHOOL MATTERS, BY DEMOGRAPHIC CHARACTERISTICS

	Base	High	Medium	Low
Statewide	1001	35%	43	22
S. F. Bay Area	238	32%	44	24
Other Northern California	196	32%	43	25
L. A. - Orange Counties	448	38%	41	21
San Diego County	67	26%	52	22
Other Southern California	52	38%	42	20
Sex:				
Male	498	29%	43	28
Female	503	41%	42	17
Race:				
White	900	34%	43	23
Negro	63	44%	43	13
Other	36	31%	30	39
Income:				
Under $3,000	72	25%	40	35
$3,000 - $4,999	80	29%	44	27
$5,000 - $6,999	155	26%	47	27
$7,000 - $9,999	248	35%	40	25
$10,000 - $14,999	258	37%	47	16
$15,000 and over	138	51%	38	11
Refused	50	28%	44	28
School Experience:				
Children in public school	469	39%	42	19
No child in public school	532	31%	44	25
Child in private school	91	38%	46	16
No child in private school	910	34%	43	23
Child in grade K-4	297	38%	42	20
Child in grade 5-8	261	37%	46	17
Child in grade 9-12	221	41%	41	18
Child in school, last 5 years	61	52%	34	14
No child in school, last 5 years	141	27%	45	28
Respondent attended public school	926	35%	42	23
Respondent attended other	181	35%	49	16
Respondent attended public school in California	461	37%	39	24

It is clear from Table IV-2 that the following factors affect the average proportion of High participants:

1. Area of state:

Norm for high participation	35%	
Los Angeles and Southern California	38%	(+ norm)
San Diego	26%	(- norm)

This finding, together with the finding in Section I, that San Diego had a below average proportion of Critics and Los Angeles an above average proportion of Critics, suggests that Los Angeles has more Critics interested in school affairs than other parts of the state, San Diego in particular.

This suggestion, taken with the finding of the growing turnout of critics at school elections, would lead to the inference that school officials face more obstacles in relating to their communities in Los Angeles and Orange Counties than in other parts of the state, particlarly in San Diego County where the community enjoys a greater proportion of Supporters, even though they are not as active. As previously mentioned, the process of active-criticism as a function of population density and growth is worthy of additional study.

2. Male-female participation:

High participation norm	35%	
Women	41%	(+ norm)
Men	29%	(- norm)

3. Race participation:

White	34%	(norm)
Negro	44%	(+ norm)

4. Income:

High participant norm	35%	
$3000	25%	(- norm)
$5000	29%	(- norm)
$7000	26%	(- norm)
$10,000	35%	(norm)
$15,000	37%	(+ norm)
Over $15,000	51%	(+ norm)

This finding is important since it clearly establishes the positive relationship of increasing income with increasing participation. It is even more significant when related to the finding in Section II that increasing income is also related to increasing opposition to change. The conclusion here is striking, not only because it suggests that affluent members of the community are more likely to be Opponents of change, but also because the affluent, being more active, would appear to be the first and most formidable opposition any change proposals will face.

Reaction of Public Toward Decision Making in School Affairs

To what extent does the public feel that decisions regarding school affairs should be made by professional educators, rather than by public opinion?

In order to determine an answer to this, respondents were asked two questions to test their agreement with the idea that professional educators, rather than the public, should make the main decisions about: (1) what subjects should be taught, and (2) how the school system should be run.

Over 70% of all respondents favored the professional as the decision maker on both selection of subjects and the running of schools, and when the responses are combined to make allowance for a third position between the "public" and the "professional" as a decision maker, the results still strongly favored the professional, as shown in Table IV-3.

Table IV-3

% RESPONDENTS, BY RELIANCE ON PROFESSIONAL AND PUBLIC OPINION IN SCHOOL AFFAIRS

Public opinion	In between	Professional opinion	Total
14%	21%	65%	100%
			(base: 1001)

The figures in Table IV-3 are the statewide norms against which respondents can be examined by other characteristics.

Characteristics of Reliance on Professional-Public Decision

Table IV-4 shows how demographic characteristics relate to decision reliance by various segments of the public.

Table IV-4 shows very few departures from the statewide norms given at the top of each column. While there are very slight tendencies in Los Angeles and Orange Counties (16%) and other Southern California areas (19%) to be more than average in favor of "public opinion," and while Negroes (19%) are slightly over the norm (13%) for "public opinion," support for the professional decisionmaker seems overwhelming throughout all the subgroups of the public.

The Public Estimate of Public Opinion as an Effective Force in Education

If the public favors professional opinion rather than public opinion, how does it feel about the effect of local citizen opinion on (1) what subjects are taught and (2) how the local schools are run?

To answer this, respondents were asked two questions about how much influence they thought the opinions of citizens in their communities had on what subjects were taught in schools and on the way their schools were run.

Only 18% felt that the citizens' opinions were of much influence (very great or quite a bit) on subjects, and only 21% felt citizens' opinions were of much influence

Table IV-4

% RESPONDENTS WHO APPEAR TO RELY ON PROFESSIONAL RATHER THAN PUBLIC OPINION IN SCHOOL AFFAIRS, BY DEMOGRAPHIC CHARACTERISTICS

	Base	Public opinion	In between	Professional opinion
Statewide	1001	14%	21	65
S. F. Bay Area	238	11%	18	71
Other Northern California	196	10%	25	65
L.A. - Orange Counties	448	16%	21	63
San Diego County	67	13%	24	63
Other Southern California	52	19%	21	60
Sex:				
Male	498	15%	21	64
Female	503	13%	21	66
Race:				
White	900	13%	21	66
Negro	63	19%	22	59
Other	36	11%	31	58
Income:				
Under $3,000	72	14%	22	64
$3,000 - $4,999	80	15%	26	59
$5,000 - $6,999	155	15%	23	62
$7,000 - $9,999	248	13%	22	65
$10,000 - $14,999	258	14%	20	66
$15,000 and over	138	15%	19	66
Refused	50	6%	24	70
School experience				
Children in public school	469	15%	21	64
No child in public school	532	13%	21	66
Child in private school	91	20%	20	60
No child in private school	910	13%	22	65
Child in grade K-4	297	17%	21	62
Child in grade 5-8	261	14%	23	63
Child in grade 9-12	221	15%	21	64
Child in school, last 5 years	61	12%	34	54
No child in school, last 5 years	141	12%	23	65
Respondent attended public school	926	14%	21	65
Respondent attended other	181	13%	23	64
Respondent attended public school in California	461	15%	18	67

on the way schools were run. Fewer than 25% felt that citizens' opinions were of "some influence," while about 50% felt citizens' opinions were only "slightly, if at all," influential.

When the responses to these two questions are combined to form an "influence of public opinion" scale with an allowance for a mid-range group of inbetweens, the statewide norms for each group is as shown in Table IV-5.

Table IV-5

% RESPONDENTS BY DEGREE OF INFLUENCE THEY FEEL PUBLIC OPINION HAS ON SCHOOLS

No opinion	Influential	Inbetween	Not influential	Total
4%	11%	28%	57%	100%

These figures are the statewide norms against which respondents can be examined by other characteristics.

Characteristics of Perceived Inference

Table IV-6 shows how demographic characteristics are related to perceived influence of public opinion.

The results shown in Table IV-6 demonstrate the consistency of the widespread attitude that "public opinion" is ineffective in school affairs, as far as the usual demographic characteristics are concerned. While there are slight variations (for example, women (52%) are less inclined than men (61%) to feel that public opinion is ineffective), this probably is simply the result of the fact that women participate more in school affairs.

Geographically, Los Angeles County respondents felt that public opinion was less effective (61%) than respondents in other areas, particularly the San Francisco Bay Area (47%). On other characteristics, people in income groups of less than $5,000 a year are more inclined to feel public opinion is ineffective (65%) than income groups of more than $10,000/year (53%).

While these findings may reflect some overall public feeling that "vox populi" is not "vox dei" in a general sense, it is more likely that it is specific to public opinion on education. The interpretation is suggested by the earlier described public view that the professional educator is better at decision making than public opinion. With this willingness to "let the experts make the decisions" attitude established, it can be argued that the public may see its own opinions as somewhat less relevant on such matters. If this is indeed the case, then the present system of reliance on public decision for school tax-override and bond elections might seem to confound the public, which apparently sees itself as less qualified than professional educators to make such decisions.

The issue is further complicated by the fact that tax-override and bond elections have the customary goal of improving a given school district's salaries or facilities either to surpass the statewide allowance, or to equal some other "norm" established as a result of an override election in surrounding districts. The question therefore arises: how does this process square with the public's democratic desire for equality of educational opportunity, and its support, established in Section II, for equal facilities and budgets?

The findings here suggest that the public expects the professional educators to determine, at a higher level than public opinion, what constitutes an equal educational opportunity.

Table IV-6

% RESPONDENTS, BY DEGREE OF INFLUENCE THEY FEEL PUBLIC OPINION HAS ON SCHOOLS, BY DEMOGRAPHIC CHARACTERISTICS

	Base	Influential	In between	Not influential	No opinion
Statewide	1001	11%	28	57	4
S. F. Bay Area	238	13%	39	47	1
Other Northern California . .	196	14%	24	59	3
L. A. - Orange Counties . .	448	10%	24	61	5
San Diego County	67	8%	28	54	10
Other Southern California . .	52	8%	31	61	-
Sex:					
Male	498	9%	28	61	2
Female	503	14%	29	52	5
Race:					
White	900	11%	28	57	4
Negro	63	13%	25	57	5
Other	36	5%	42	53	-
Income:					
Under $3,000	72	11%	14	64	11
$3,000 - $4,999	80	4%	27	65	4
$5,000 - $6,999	155	11%	26	57	6
$7,000 - $9,999	248	12%	29	58	1
$10,000 - $14,999	258	12%	33	52	3
$15,000 and over	138	13%	31	55	1
Refused	50	12%	16	60	12
School experience:					
Children in public school. .	469	12%	28	56	4
No child in public school. .	532	10%	28	58	4
Child in private school . .	91	8%	32	58	2
No child in private school .	910	11%	28	57	4
Child in grade K-4	297	10%	31	55	4
Child in grade 5-8	261	11%	29	56	4
Child in grade 9-12 . . .	221	12%	25	59	4
Child in school, last 5 years	61	16%	31	52	1
No child in school, last 5 years	141	10%	19	70	1
Respondent attended public school	926	11%	28	57	4
Respondent attended other .	181	11%	34	50	5
Respondent attended public school in California . . .	461	11%	29	58	2

V. THE GENERAL STANCE OF CRITICS AND SUPPORTERS

General

In Section I an effort was made to examine some of the demographic or social factors which seemed to determine support or criticism of public education. While a number of relevant factors were found, it would also appear useful to determine how being a Critic or a Supporter influences other behavior, such as voting or participation in school affairs, and other attitudes, such as opinion on school funding, or emphasis on grades.

This section then, will examine other topics addressed by respondents previously classified as Critics and Supporters of schools.

Participation in School Affairs

The scale of participation developed in Section IV was used to determine the degree of activity for Critics and Supporters in school matters, as shown in Table V-1:

Table V-1

% RESPONDENTS BY DEGREE OF PARTICIPATION IN SCHOOL MATTERS; BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetween
High participation	35%	39%	36%	29%
Medium participation	43	44	41	43
Low participation	22	17	23	28
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-1 shows that Critics (39%) are only slightly more likely to be high on participation in school affairs than Supporters (36%), who in turn are more likely to be high on participation than Inbetweens (29%). The general statement that Critics are more likely to be participants than Supporters or Inbetweens is strengthened by noting that Supporters (23%) and Inbetweens (28%) are also more likely to be low participants than Critics (17%). Thus, where there is criticism of the schools it is more likely to be active than passive, and, conversely, where there is support it is a little more likely to be passive. This finding parallels the suggestion earlier that participation was most active in Los Angeles and Orange counties (where there are proportionately more Critics of schools), while San Diego, more passive, had more Supporters.

The important issue for relations between school administrations and their communities that is raised, but not answered, by these data is whether increased participation leads to criticism, or whether increased criticism leads finally to activity and participation. Does familiarity breed criticism or does dissatisfaction breed activity? It is important for school administrators to know whether the citizen who begins to participate in school matters is neutral or critical at the outset. For if citizens are made critical by their experience and exposure to their schools, different corrective measures are called for than if the citizen is more likely to bring an already critical attitude with him when he participates. Further research will be needed to determine the direction of the cause and effect relationship.

Reliance on Professionals

The scale of reliance on public vs. professional opinion developed in Section IV, was used to determine differences between Critic and Supporter positions on decision-making as shown in Table V-2:

Table V-2

% RESPONDENTS WHO APPEAR TO RELY ON PROFESSIONAL RATHER THAN PUBLIC OPINION IN SCHOOL MATTERS; BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetweens
Public	14%	15%	11%	14%
In between	21	20	22	22
Professional	65	65	67	64
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

As shown in Table V-2 there is not much difference between the overall position of Critics or Supporters from the statewide norms. Both lean strongly toward the professional side. However, the small differences show that Critics value public opinion a bit more than Supporters do (15% vs. 11%).

It will also be noted that the Critics seldom withhold approval of professional educators, despite their inferred greater participation in school affairs. The study did not undertake to examine the public's reaction to different philosophies among professional educators which undoubtedly exist, but since most Critics are found in Los Angeles and Orange counties, these data seem to represent an expression of confidence in their notion, whatever it may be, of the "professional educator." Further research would be required to determine what specific kind of educational philosophy such a notion represents. In Section I the study revealed that one difference was the increased emphasis put upon the 3-R's by Critics.

Perceived Effectiveness of Public Opinion

The scale of public opinion influence developed in Section IV was used to determine the way Critics and Supporters differed on how influential they thought it was, as shown in Table V-3 .

Table V-3 shows that Critics (64%) are less likely to feel that public opinion has any influence on schools than Supporters (48%), although the overall tendency is quite clear (neither group feels public opinion is very influential), that more Supporters (16%) express the reservation that public opinion is important than Critics (7%). This finding helps further to describe Critic and Supporter behavior regarding participation and suggests the following line of argument: The Critic participates more actively than the Supporter just because he feels that public opinion is ignored or that his own opinion might not have any influence on the course of events. The

Table V-3

% RESPONDENTS BY DEGREES OF INFLUENCE THEY FEEL PUBLIC OPINION HAS ON SCHOOLS BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetweens
Influential . . .	11%	7%	16%	11%
In between . . .	28	26	32	27
Not influential . .	57	64	48	58
No opinion . . .	4	3	4	4
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Supporter, however, would seem to rely more on what he perceives to be greater sensitivity to public opinion by school officials, and thus does not feel so compelled to act.

There is, however, the difficulty of making a causal inference: Does participation in school affairs lead the Critic to the conclusion that public opinion is not effective because he observes that it is ignored by educators? Or, is the Critic the kind of person who does not feel public opinion is effective, and therefore undertakes participation perhaps in order to exert his own influence? It would appear on the basis of the admittedly limited data that this last is the case. For if it were not, one would expect the Critic to be less willing to trust professional judgment, that is one would expect the Critic to be disappointed to discover that public opinion were ignored, and to reflect this experience by showing less confidence in professional judgment.

If the Critic, however, started participation with a bias against the effectiveness of public opinion, and perceived the professionals to be also insensitive to it, he might see their views in this area as congenial to his own, and thus support the professional.

On the other hand, if the Critic discovered, through participation, that the professional educators were sensitive to public opinion, one would then expect the Critic to be more inclined to rate public opinion as effective. So it could be argued that the tendency of the Critic is to bring to his participation a disposition to discount public opinion as a desirable and/or effective force in school policy; and a disposition to see the professional educator in a similar light.

The question this raises for further study is: How do professional educators really feel about and respond to public opinion? That is, does the Critic overlook or misperceive the professional educator's real sensitivity to public opinion or not?

Other Aspects of Criticism and Support

Various topics related to schools and education were contained in the questionnaire. These topics were used in the remainder of this section to determine differences in the way Critics and Supporters addressed key aspects of education, as follows:

Voting Behavior

Table V-5

% RESPONDENTS VOTING IN ELECTIONS, STATE AND SCHOOL, BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetweens
Voted last statewide election:				
Yes	71%	75%	70%	69%
No	29	25	30	30
Don't know	*	-	-	1
	100%	100%	100%	100%
Last time voted in an election on schools:				
Within past year	51%	55%	50%	47%
1-2 years ago	17	17	19	14
2-4 years ago	4	3	4	6
5 or more years ago	2	3	2	2
Never	18	16	18	20
Don't recall	8	7	8	10
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

*Less than 1/2 of one percent.

Table V-5 shows that although the turnout for recent school elections (about 50%) is lower than it is for Statewide elections (about 70%), Critics are slightly more likely to vote in both types of elections than Supporters are (75% to 70% and 55% to 50%). It is interesting to note that, in the past, Supporters (19%) may have been slightly more likely to turn out than Critics (17%) in school elections. This finding was discussed earlier in Section I.

School Funding

Table V-6 shows that Statewide there is substantial agreement for State tax money (41%) rather than local tax revenues (17%) to be used for educational support. Supporters are more inclined to feel this way than Critics (47% vs. 36%). In considering Federal tax moneys, Critics (21%) are slightly more in favor of Federal aid than Supporters are (16%), but Critics (19%) are slightly more in favor of local taxes than Supporters are (15%). While these differences are slight enough to be dismissed, they do suggest that persons can be critical of schools for two widely different motives.

That is, Critics, although they mostly favor State tax funds, are divided among themselves on Federal vs. Local tax funds. The appropriate inference seems to be that there are at least two kinds of Critics: those "liberally" and those "conservatively" inclined. An analysis of degree participation by tax inclination (Table V-7a) would reveal which kind the schools face directly as high participants.

Table V-6

% RESPONDENTS ON FISCAL MATTERS, BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetweens
Tax money, best source for schools:				
Federal	19%	21%	16%	20%
State	41	36	47	40
Local	17	19	15	18
Other	17	19	16	15
Don't know	6	5	6	7
	100%	100%	100%	100%
School administrators business-like in spending tax money:				
Very	33%	36%	47%	27%
Somewhat	31	33	25	34
Only slightly	10	14	7	10
Not at all	8	12	5	5
No opinion	18	16	15	24
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-7a

% CRITICS BY DEGREE OF PARTICIPATION BY FAVORED SOURCE OF TAX SUPPORT

	Critics			
		Participation		
	Total	High	Medium	Low
Federal	21%	20%	25%	17%
State	36	39	36	33
Local	19	22	17	17
Other	19	16	20	25
Don't know	6	4	2	8
Base:	(322)	(127)	(143)	(52)

Table V-7a shows relatively small differences, but it is interesting that the High-active Critics are more likely to favor Local taxes (22%) than are Medium- or Low-active Critics (17%). This tendency is coupled with the fact that the Medium-active Critic is a little more likely to support Federal taxes (25%) than the High-active Critic (20%).

Before resting the case for an overall tendency for the High-active Critics to be more "conservative" financially, it should be observed that Low-active Critics (largely persons with no children in school) are also divided on the issue. Furthermore, when Critics are compared with Supporters on the same behavior and attitudes, it can be seen that a similar pattern prevails.

Table V-7b

% SUPPORTERS BY DEGREE OF PARTICIPATION, BY FAVORED SOURCE FOR TAX SUPPORT

	Supporters			
		Participation		
	Total	High	Medium	Low
Federal	16%	10%	19%	20%
State	47	47	45	49
Local	15	17	15	11
Other	16	19	15	15
Don't know	6	7	6	5
Base:	(322)	(116)	(132)	(74)

Table V-7b shows Supporters to have the same pattern of preference for tax support as that for Critics. That is, it is the Low or Medium active who is more likely to favor Federal tax (19%) than the High active (10%). Thus, the inclination to favor either local or Federal tax funding of schools is not explained on the basis of criticism or support, but seems, rather, to be more related to degree of participation in school matters. Those who are most active are more likely to have a more conservative view, at least in school tax matters.

Consequently, the attitude the schools meet first, from their most active Supporters or Critics alike, is one which mostly favors State taxes for schools, and which next most strongly supports local tax sources.

Among those lowest in participation (who are more likely to be those with lower incomes or those with no children in school), however, there is a difference between Critics and Supporters. Given that both groups mostly support State taxes, the non-participant Critics are equally divided on Local and Federal taxes (17% each) while the non-participating Supporters are more likely to lean in the direction of Federal taxes (20%) than they are in the direction of Local taxes (11%).

The analysis here has been carried to the limits of the data available because of the importance respondents attached in Section II to changes in schools which provided a more equal educational opportunity. Achieving equality in this sense seems closely related to matters of control and funding, and therefore a closer look at the data is warranted. Thus, after conceding that there is widespread support among all groups for State tax funding, the secondary sources chosen present a more detailed picture of the basic ideological or psychological leanings of Critics and Supporters, and actives and not-so-active members of the public.

The second part of Table V-6 had to do with whether or not school administration were viewed as businesslike in their handling of school finances. As might be expected, Critics are much less likely (26%) to feel that administrators are "very businesslike" than Supporters (47%). This suggests that while the Critic has confidence in the professional in matters of subjects and teaching methods, he has less confidence than the Supporter in the professional's financial acumen.

Importance of Schools

Table V-8 shows that the majority of Californians agree that education is most important. This finding is particularly striking in light of the fact that it is rated above fire and police protection and national defense. The quality of education which is available to citizens is seen as more important than any other civil activity. Moreover, there are few differences here between Critics and Supporters.

Table V-8
% RESPONDENTS WHO AGREE THAT GOOD EDUCATION IS A MORE IMPORTANT PROVISION THAN FIRE, POLICE, OR NATIONAL DEFENSE; BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
Agree strongly	60%	62%	59%	59%
Agree moderately.	23	20	25	24
Disagree moderately. . . .	10	12	10	8
Disagree strongly.	4	3	3	6
No opinion.	3	3	3	4
	100%	100%	100%	100%
Base	(1001)	(322)	(322)	(357)

The political implications in this finding are also significant because in this most important area citizens are likely to feel they have little voice (public opinion is not influential), they exert their influence less (turnout at school elections is smaller than for Statewide elections), and they do not feel qualified to make decisions regarding schools (educators should make main decisions). This suggests that the most important provision which a country makes for its citizens is, by consent, largely out of the hands of the citizens themselves. While this is a seemingly inescapable conclusion, it must be viewed historically. That is, the willingness of the public to turn over education to the educators may be a reflection of the past trustworthiness of educators. One would expect, if education were more "political" that desire for public control would be evidenced by a greater turnout at school elections at a level corresponding to "political" voting behavior. The question suggested, but not answered, here is: Is the present increase in turnout at school elections, over past years, a reflection of increased interest in education or a sign that education is increasingly being seen as a subject for political influence?

Emphasis on Grades

Table V-9

% RESPONDENTS ON DEGREE OF EMPHASIS THAT SHOULD BE PUT ON GRADES, BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
Great deal	37%	37%	40%	36%
Moderate	46	41	46	51
Very little	11	14	9	9
None	4	7	3	3
No opinion	2	2	2	1
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-9 shows that most Californians feel that grading emphasis should be between moderate (46%) and a great deal (37%). Some emphasis on grades, then, is widely accepted. Supporters of schools are slightly more inclined to emphasize grades a great deal (40%) than Critics (37%), while Critics are more inclined to de-emphasize grades (Very little or none =21%) than Supporters (12%). This difference on de-emphasis by Critics again may indicate that support is homogeneous while criticism is of two kinds: "liberal" and "conservative." But the evidence here shows that the vast majority of Critics and Supporters alike favor emphasis upon grades.

Blame for Educational Failures

Table V-10

% RESPONDENTS DETERMINING VARIOUS FAULTS WHEN SOME CHILDREN DO NOT GET AS MUCH FROM SCHOOL AS OTHERS; BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
Reason:				
No place to study	3%	3%	4%	2%
Racial differences	4	4	4	3
Parent interest	53	51	53	53
Teachers	28	34	24	26
Administrators	5	7	4	4
Student interest	36	34	38	36
Student self-disciplines	29	26	28	26
Other	3	2	5	4
No opinion	3	2	3	3
Base:	(1001)	(322)	(322)	(357)

Table V-10 shows that over half the respondents, whether Critics or Supporters, place the blame for children's failure to get something out of school on the parent. As a secondary cause, teachers or students themselves are seen at fault.

Differences seem to occur on secondary causes: The Critic holds the student and teacher equally at fault (34%), while the Supporter is much less likely to blame the teacher (24%) than the student (38%). The Supporter also is less likely than the Critic (24% vs. 34%) to blame the teacher. This is consistent with the premise set out in Section 1, namely, that satisfaction with school performance would be related to other specific attitudes.

Quality of Education and Differences

Table V-11

% RESPONDENTS ON PERCEIVED SIMILARITY OF METHODS AND SUBJECTS OF CALIFORNIA SCHOOLS, BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
Similar	34%	32%	38%	31%
Vary a little bit.....	21	18	25	22
Vary a lot..........	30	35	26	29
No opinion..........	15	15	11	18
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-11 shows that Critics see more differences generally in California schools than Supporters. For example, Critics are more likely (35%) to say schools vary a lot than Supporters are (26%), and Critics (32%) are a little less likely to feel schools are the same than Supporters are (38%).

Differences in available funds, per pupil, as seen by the California public is shown as follows:

Table V-12

% RESPONDENTS ON PERCEIVED DIFFERENCES IN AVAILABLE FUNDS, PER PUPIL, AMONG SCHOOLS BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
All have same......	13%	11%	15%	14%
Some have more....	68	75	63	65
No opinion.........	19	14	21	21
Base:	(1001)	(322)	(322)	(357)

Table V-12 shows, like the previous differences in methods and subjects, that although nearly all respondents agree that some districts appear to have more money than others, Critics (75%) are more likely to feel this way than Supporters (63%).

Those who are familiar with public education in California, or those who have some insight into its operation, recognize that despite various acts of legislation governing school funding (such as the amount of assessed property evaluation which stands behind each child in a unified district) there are actually large differences in the quality of education offered from district to district. While it is true that these differences exist only because voters within districts consent to them, it was felt to be a function of this research to ask the public about the differences they recognized. Our purpose was not so much to determine whether or not such differences were seen as justified as it was to find out how aware of differences people were.

Table V-13

% RESPONDENTS ON QUALITY OF EDUCATION IN POOR OR MINORITY DISTRICTS COMPARED TO THAT IN RICHER DISTRICTS, BY CRITICS, SUPPORTERS, AND INBETWEENS

	Statewide	Critics	Supporters	Inbetweens
Poor much better......	1%	2%	1%	1%
Poor somewhat better..	2	1	3	2
Poor about same......	40	35	43	40
Poor somewhat worse..	28	29	27	29
Poor much worse......	20	26	19	15
No opinion............	9	7	7	13
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-13 contains the rather surprising finding that the largest group of Californians, statewide, feel that rich and poor districts alike have the same quality of education. The objective determination of actual differences is another question altogether, and might pose great research difficulties in determining whether budgets or students' abilities or maturation make the difference. However, only 20% of Californians feel that the education available to the poorer districts is "much worse" than that available in richer districts. Supporters, as shown here, are somewhat less inclined to see deficiencies in poor school districts than Critics are: 47% of the Supporters feel poorer districts are as well off, or even better off, while only 38% of the Critics feel these districts offer the same education; conversely, 55% of the Critics feel poorer districts are less well off, while 46% of Supporters believe this.

It will be recalled that earlier (Table V-10) Supporters were shown to be slightly more inclined than Critics to blame parents and students for educational failure, and Critics were more inclined than Supporters to blame the teachers -- and by implication the schools. These two findings together with those in Tables V-11, V-12, and V-13, which show Critics more sensitive to school-to-school differences than Supporters permits an interesting generalization. The Critic would appear to focus his attention on the differences in the educational system, while the Supporter is more inclined to focus his attention on the students. Since the educational process does consist of the educational mechanism interacting with the student, it is not surprising that the primary attention of one kind of citizen might be directed more toward one component than the other. This general notion is consistent with findings in Section I, where the Supporter was seen to be more satisfied generally with what the educational mechanism offers than the Critic. It is also consistent with findings on participation in school affairs: the Critic is inclined to be more actively interested in participation in the school mechanism.

In addition, the assumption of orientation toward the educational mechanism might help to clarify questions raised earlier about whether participation leads to criticalness or whether criticalness leads to participation. The clarifying suggestion is that an orientation which is mechanism-centered rather than student-centered leads to participation, and when failures in the interaction are perceived they are likely to be blamed on the center of attention, which is schools for Critics and students or parents for Supporters.

The Supporter is described in this paradigm as more passive in his orientation toward the schools and more centered on the student. He has been found to be more accepting of what the mechanism has to offer and less willing to criticize its operations or its administration. The less mechanism-centered Supporter is also less concerned with Federal tax support for the system and is more in favor of emphasis upon grades -- which are student-centered.

It might seem appropriate to ask at this point if this difference in orientation of Critics and Supporters is related more to their personality style or to the situation around them. If one recalls that there is a greater proportion of Critics than Supporters in Los Angeles and Orange counties, an explanation would be that high-population density factors are more likely to cause dissatisfaction and to direct attention toward the educational mechanism.

It should be emphasized here that these findings emerge only dimly, but the consistency of slight inclinations ought not to be altogether dismissed. The implication is that insofar as gaining public favor is concerned, one might address appeals to Supporters in terms of effects on students, and address appeals to Critics in terms of effects on the mechanism for teaching, such as the plant facilities and teaching methods. Another implication of this suggestion is that some criticism may be transitory and is temporarily mechanism-centered due to unfavorable school conditions in high density areas.

Credentials for Teaching

Table V-14

% RESPONDENTS ON WHETHER OR NOT TO ALLOW QUALIFIED BUT UNCREDENTIALLED TEACHERS IN PUBLIC SCHOOLS, BY CRITICS, SUPPORTERS, AND INBETWEENS

	State-wide	Critics	Supporters	Inbetweens
Don't allow..........	43%	37%	52%	41%
Allow but limit.......	20	19	22	20
Allow................	33	43	23	34
No opinion...........	3	2	2	5
	100%	100%	100%	100%
Base:	(1001)	(322)	(322)	(357)

Table V-14 shows that Critics strongly favor the idea of permitting teachers without credentials to be hired, while Supporters do not. In this case it might be that Critics are again concerned with the effects on the system or mechanism, i.e., suspending credentialling might be seen to provide more teachers, ease the procurement problem, and better meet the scheduling needs of the educational mechanism. In contrast, the Supporters might have reservations about the effect of such a "relaxation of the rules" on students. Statewide, however, this is a divisive issue since people seem more inclined to favor either Don't Allow (43%) or Allow (33%), but are not as much for the compromise (20%).

VI. THE GENERAL STANCE OF OPPONENTS AND ADVOCATES OF CHANGE

General

In Section II an effort was made to examine some of the major factors which seemed to determine opposition or advocacy of change in public education. It would now appear useful to determine how being a general Advocate or Opponent of change influences other behavior, in much the same manner as Section V described those influences for Critics and Supporters.

Participation

Table VI-1

% RESPONDENTS BY DEGREE OF PARTICIPATION IN SCHOOL MATTERS, BY OPPONENTS, ADVOCATES AND UNDECIDEDS

	Statewide	Opponents	Advocates	Undecideds
Participation				
High................	35%	34%	36%	34%
Medium............	43	45	41	42
Low.................	22	21	22	24
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-1 shows that being an Opponent or Advocate of change in schools has practically no effect on participation in school affairs. However, the finding clarifies the suggestion made by the data in Sections II and IV, i.e., that the more affluent are both more likely to be Opponents of change and more likely to be High-Participants. Since no relationship appears here in Table VI-1 between opposition-advocacy of change and degree of participation, it could be concluded that the High-Participant Opponent of change is very likely to be more affluent than the other groups classified by Table VI-1.

Table VI -2

% RESPONDENTS WHO APPEAR TO RELY ON PROFESSIONAL RATHER THAN PUBLIC OPINION IN SCHOOL MATTERS, BY OPPONENTS, ADVOCATES AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Public............	14%	17%	13%	11%
In between........	21	25	16	23
Professional......	65	58	70	67
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI -2 shows that while the majority of Californians rely on professional educators for decision making, Opponents are much less likely (58%) to do so than Advocates (70%) or Undecideds (67%).

Perceived Effectiveness of Public Opinion

Table VI -3

% RESPONDENTS BY DEGREE OF INFLUENCE THEY FEEL PUBLIC OPINION HAS ON SCHOOLS BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Influential.........	11%	9%	13%	11%
In between.........	28	31	25	28
Not influential.....	57	59	56	56
No opinion.........	4	1	6	4
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI -3 shows that neither Opponents nor Advocates feel that public opinion has much influence on the course of events in school affairs. There might be, however, a slight tendency by Advocates (13%) to see more public opinion influence than Opponents (9%).

Table VI-4

% RESPONDENTS VOTING IN ELECTIONS, STATE AND SCHOOL, BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Voted last statewide election:				
Yes....................	71%	77%	65%	71%
No.....................	29	23	34	28
Don't know.............	*	-	*	1
	100%	100%	100%	100%
Last time voted in an election on schools:				
Within past year.........	50%	55%	47%	49%
1-2 years ago...........	17	17	16	17
3-4 years ago...........	5	5	5	4
5 or more years ago.....	2	1	3	3
Never..................	18	14	19	20
Don't recall............	8	8	10	7
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

*Less than 1/2 of one percent.

Table VI-4 shows that while the self-reported turnout for school elections (about 50%) is lower than that reported by respondents for statewide elections (about 70%), the Opponents of change are more likely in both cases to turn out than Advocates. The highly affluent are more likely to turn out than the less affluent at elections, and since the affluent are more likely to be Opponents of change, this finding might best be explained in this way.

School Funding

Table VI-5

% RESPONDENTS ON FISCAL MATTERS BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Fiscal				
Tax money best source for schools:				
Federal	19%	12%	27%	18%
State	41	40	39	44
Local	17	24	13	14
Other	17	20	15	16
Don't know	6	4	6	8
	100%	100%	100%	100%
School administrators businesslike in spending tax money:				
Very	33%	34%	31%	34%
Somewhat	31	32	32	29
Only slightly	10	9	11	11
Not at all	8	7	7	8
No opinion	18	17	19	18
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-5 shows that while there is strong support statewide for state tax rather than local tax revenues for schools, the Advocate (27%) of change is quite a bit more likely than the Opponent (12%) to favor the use of Federal tax revenues for schools. Moreover, the Opponent (24%) is more likely than the Advocate (13%) to favor the use of local tax revenues. Without the further elaboration of the analysis, as performed on Critics - Supporters, the case of more conservative fiscal orientation by the Opponent of change is rested here.

Both groups are inclined to trust the businesslike judgment of school administration as shown in the second part of the table.

Importance of Schools

Table VI -6

% RESPONDENTS WHO AGREE THAT GOOD EDUCATION IS A MORE IMPORTANT PROVISION THAN FIRE, POLICE OR NATIONAL DEFENSE, BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Agree strongly...........	60%	49%	71%	59%
Agree moderately.........	23	28	18	23
Disagree moderately......	10	13	6	10
Disagree strongly.........	4	6	2	4
No opinion................	3	3	2	4
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Many of the implications of Table VI -6 have already been discussed in Section V (Table V-8). The differences here, however, are remarkable because of the finding that Advocates of change (71%) are far more likely than Opponents (49%) to feel that education is most important.

Emphasis on Grades

Table VI-7a

% RESPONDENTS ON DEGREE OF EMPHASIS THAT SHOULD BE PUT ON GRADES BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
How much emphasis should be put on grades:				
Great deal.................	37%	35%	40%	37%
Moderate..................	46	54	41	43
Very little................	11	8	11	12
None.....................	4	2	6	5
No opinion...............	2	1	2	2
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

As Table VI-7a shows there are no systematic differences between Opponents and Advocates on grading emphasis, and that there is general widespread support for at least "moderate" emphasis on grades.

Credentials for Teachers

Table VI-7b

% RESPONDENTS ON WHETHER OR NOT TO ALLOW QUALIFIED, BUT UNCREDENTIALLED, TEACHERS IN PUBLIC SCHOOLS, BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Qualified but not credentialled teaching:				
Don't allow	43%	46%	44%	40%
Allow but limit	20	25	16	19
Allow	33	26	37	36
No opinion	3	2	3	5
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-7b suggests that the issue of teachers without credentials is a divisive one. Advocates are seen here to be either for it (37%) or against it (44%) but not much on the compromise (16%). Statewide, the pattern is also somewhat divisive: Allow (33%), Don't allow (43%), Compromise (20%). These findings indicate that even those most disposed to relax credentialling, the Advocates, are still more inclined to reject it. This suggests that Advocates, like the public generally, might prefer to make changes within the traditional framework, as pointed out in Section II.

Blame for Educational Failure

Table VI-8

% RESPONDENTS DETERMINING VARIOUS FAULTS WHEN SOME CHILDREN DO NOT GET AS MUCH FROM SCHOOL AS OTHERS BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
No place to study	3%	1%	4%	3%
Racial differences	4	1	8	2
Parent interest	53	51	55	52
Teachers	28	27	30	28
Administrators	5	4	7	5
Student interest	36	38	33	36
Student self-discipline	27	30	24	26
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-8 does not show systematic effects due to opposition or advocacy of change on placing the blame for disappointing results in education. It can be seen that while the majority of all Opponents and Advocates feel the parent is at fault, the Advocates (24%) are slightly less likely than the Opponents (30%) to blame the student.

Quality of Education and Differences

Table VI-9

% RESPONDENTS ON PERCEIVED SIMILARITY OF METHODS AND SUBJECTS OF CALIFORNIA SCHOOLS, BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Similar.................	34%	39%	32%	30%
Vary a little............	21	21	20	24
Vary a lot...............	30	26	33	31
No opinion...............	15	14	15	15
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-9 shows that Advocates (33%) are slightly more likely than Opponents (26%) to see wide differences between schools, and correspondingly, they are also slightly less likely than Opponents (32% vs. 39%) to see similarities.

Table VI-10

% RESPONDENTS ON PERCEIVED DIFFERENCES IN AVAILABLE FUNDS, PER PUPIL, AMONG SCHOOLS BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
All have same...........	13%	15%	9%	16%
Some have more.........	68	66	70	67
No opinion..............	19	19	21	17
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-10 shows that Advocates (70%) are only slightly more likely than Opponents (66%) to see differences in the funds, per pupil, available to schools; and Advocates are less likely (9%) than Opponents (15%) to feel the available funds are the same.

Table VI-11

% RESPONDENTS ON QUALITY OF EDUCATION IN POOR OR MINORITY DISTRICTS COMPARED TO THAT IN RICHER DISTRICTS, BY OPPONENTS, ADVOCATES, AND UNDECIDEDS

	State-wide	Opponents	Advocates	Undecideds
Quality of education in poor, minority neighborhoods compared to richer areas:				
Much better	1%	1%	1%	2%
Somewhat better	2	2	2	2
About same	39	47	30	41
Somewhat worse	28	29	28	27
Much worse	20	11	31	18
No opinion	9	10	8	9
	100%	100%	100%	100%
Base:	(1001)	(337)	(332)	(332)

Table VI-11 shows that Opponents (47%) of change are more likely than Advocates (30%) to feel that the quality of education is the same for rich and for the poor minority districts. At the same time Advocates of change (31%) are much more likely than Opponents (11%) to feel that the quality of education in poorer districts is worse than in richer districts.

Tables VI-9, 10, and 11 taken together show that the Advocate consistently sees more differences among schools, budgets and quality of education than the Opponent of change. When this finding is considered with the findings that Advocates (71%) are far more likely than Opponents (49%) to feel that education is the most important service a nation provides (Table VI-6), that Advocates (70%) are much more likely than Opponents (58%) to rely on the decisions of professional educators (Table V1-2), and that Advocates (27%) are more likely than Opponents (12%) to favor federal tax revenues for schools (Table VI-5), there emerges the following strong inference:

Advocates -- those who most strongly favor changes in education to achieve equality of individual opportunity -- feel that such equality of opportunity does not now exist, and that it is not likely to be achieved by either public opinion or localized reform. They feel that the responsibility for this highly important function should be given over to higher councils. In short, the Advocate for change, who is more perceiving of discrepancies in education than others, apparently feels powerless, and thus represents the extreme example of the attitude suggested in Section V, viz., that education, the most important educational function of government, is by consent, out of the hands of the public.

Because these overall findings are so consistently differentiated by Advocates and Opponents, and yet are not easily conceptualized as attributes of some attitude related only to schools, it is suggested that they are descendants of a much more general set of beliefs concerning the relationship of people to government which is far beyond the scope of this present research to trace.

VII. INFORMATION SOURCES AND CHANNELS

General

This brief section presents findings on how respondents rated different channels of information about schools. Such information, viewed broadly, can be seen as being a two-way flow from the school authorities to the citizens and from citizens (e.g., public reaction feedback) back to the school authorities.

Who Is Most Helped by What Channel

Both kinds of information are carried by a variety of channels, such as newspapers, meetings, announcements, or even students themselves. Although these information channels might be evaluated differently by school authorities, the data which are available from this study explore only briefly the public's appraisal of different channels.

Respondents were asked first how "helpful" they felt different channels were to them as citizens, and then they were asked how helpful they thought various channels were to school authorities in feeding back public sentiment.

As it appears in Table VII-1, "Helpful" consists of the percentage of responses falling into the "Extremely helpful" and "Somewhat helpful" categories on the questionnaire.

Table VII-1

% RESPONDENTS ON HELPFULNESS OF DIFFERENT INFORMATION CHANNELS, BY HELP TO CITIZENS AND SCHOOL AUTHORITIES

Information Channel	Helpful to citizens	Helpful to school authorities
Newspapers	72%	67%
Radio, TV	64%	NA*
School Board Meetings	28%	79%
Citizens Committees	20%	NA
Newsletters, School Announcements	61%	NA
Personal Contact, with Teachers, Administrators	67%	NA
Personal Contact with Students	72%	88%
Personal Contact with Parents	NA	88%
Personal Contact with Friends, Neighbors	NA	63%
PTA Meetings	35%	71%
Public Opinion Polls	NA	72%
(Base)	(1001)	(1001)

*NA = Not Applicable

The results in Table VII-1 show that, as common sense might suggest, newspapers and students are seen as the common channels of information exchange. It should be pointed out that students are seen as helpful to school authorities by more people (83%) than to citizens (72%); and that newspapers are seen as helpful to citizens by a few more people (72%) than to school authorities (67%).

There are other more significant differences in the table, however.

1. School Board meetings are seen by far more people (79%) to be helpful to school authorities than to citizens (28%).
2. PTA meetings, also, are seen by far more people (71%) to be helpful to school authorities than to citizens (35%).
3. While citizens committees may be extremely useful, they are not seen here to be helpful information channels for citizens by many respondents (20%).

These comparisons suggest that the PTA and the school board meetings do not serve the citizens as much as they do the school authorities. This could imply either that the citizen feels the time he might invest in a PTA meeting or attending school board meetings does not return him much information; or that these channels are not geared to disseminate information so much as they are to gather it for school authorities. In either case the implications are the same:

1. Accounts of school board meetings usually appear in the newspapers, which the citizen views as a key channel. Secondly, the average citizen does not attend school board meetings himself. These facts suggest that school authorities should realize that newspapers, as a secondary channel, filter out many of the announcements and actions taken at board meetings, and, consequently, that such information rarely reaches the citizen directly. Actions at board meetings are thus effectively taken out of the public view, and cannot be assumed to be communicated to the public in any meaningful way.
2. More surprising is the apparent feeling that one does not find out what is going on in the schools from PTA meetings. The implication here is that Californians see PTA meetings as helping the school more than helping the citizen. Since we do not have in this research the separate perceptions of school authorities on PTA functions, these implications cannot be further elaborated, but from the viewpoint of schools and their communities, it is an area worthy of further study.

APPENDIX J

A PERSPECTIVE ON THE EDUCATION OF TEACHERS IN CALIFORNIA IN 1980

Submitted by:

Dwight W. Allen

and

Kevin A. Ryan

Stanford University
Stanford, California

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APPENDIX J

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CONSULTANTS' REPORT TO THE STATE COMMITTEE ON PUBLIC EDUCATION: TEACHER EDUCATION

Abstract

This report gives a broadly based view of teacher education and considers the question of how teachers might best be trained in the future. The greater part of the first half of this paper reviews the present state of the profession and teacher training in California. An effort is made to determine professional status and causes of teacher dissatisfaction (pp. 301-3), training patterns in pre-service teacher preparation (pp. 303-6), the effects of credentialling structure on teacher training (p. 307), the present limits of in-service teacher training (pp. 307-10), and the problems surrounding current merit pay proposals (pp. 310-11).

The conclusions reached in this first half of the report are expanded to create some new assumptions and recommendations in pages 311 through 326. In these sections, particular weight is given to the central need for determining separate levels of professional responsibility within the teaching profession. This concept of the differentiated staff is presented in pages 311 through 315, with the future role of pre-service training examined in pages 315 through 318, and recommendations for expanding in-service training in pages 318 through 322. The report concludes with the consultants' recommendations for interim steps and suggestions for the roles of various agencies.

The tenor of this report may be summarized in a very general way by saying that it is the consultants' view that new models are needed for training teachers in California, and that they should largely be determined through building into the profession increased and differentiated levels of responsibility, giving primary attention to testing the kinds of staffing structures and training patterns which show promise of leading to the greater influence of the most skilled teachers upon the profession and to the enhancement of the most positive humanistic values of the educational experience.

INTRODUCTION

The purpose of this report is to focus on the present and the future of teacher education in California, on the "is" and the "ought" as perceived by the consultants in their consideration of teacher education and of the teaching profession. Within the limits of sources available and time given, the authors have attempted to give a factual presentation of the present situation and needs in teacher education. At the same time, the authors hold a strong ideologically vested interest in the quality of teacher education, particularly in California, and do not seek to cover all the possible views suggested by the topics considered herein. Since the shape of the profession itself always determines the feasibility of any program for the systematic education of teachers, an essential portion of this paper will be concerned with present and possible alternative professional responsibilities of teachers in the schools. We cannot feel it is desirable to graft an effective teacher training program on an ineffective staffing pattern. The major proposals in this paper are based on the assumption that there is a need for dramatic change in many aspects of the professional preparation and training of teachers, but that such change must be accompanied, if not preceded by radical changes in the staffing patterns and professional responsibilities in the schools. While these proposals, taken as a whole, may be controversial - and, indeed, it is our hope that they are substantial enough to be genuinely controversial - almost all of the proposals could be considered separately as a part of a more conventional framework.

It is often contended that the technology involved in bringing optimum effectiveness to a profession puts human values in a secondary position. But properly used, technology can enhance the opportunities to develop close and meaningful relationships between a profession and its clientele. As we can improve the preparation of teachers and give them technological aid, we will be opening the door to closer, more personal contact with students. It is the human beings, the real people involved in teaching and learning, which give the considerations of this report their relevance and worth. Behind these considerations is the primary desire to establish a setting in which the teacher can have more competence and integrity as a person in the most humanistic of all professions. In this setting we may then realize our most essential function, which is to allow more complete and meaningful development of the abilities and personalities of each child and student who enters the classrooms of California's public schools.

THE PRESENT STATE OF THE PROFESSION

The history of education in America presents a picture of the teacher which has changed dramatically in the 20th Century; however, changes in the nature of the job that a teacher performs have not nearly kept pace with these changes in the kind of person who enters teaching and the preparation he receives. One hundred, or even fifty years ago, the typical preparation of a teacher consisted of 9 to 12 years of schooling, followed by a period of training in the Normal Schools. The limited training of the beginning teacher thus puts him in a position where a large degree of supervision and decision-making from above was needed and where an administrative tone of paternalism toward the teacher was warranted. The teacher himself had very few areas of actual decision-making responsibility. And the limited number of alternatives that he might have in making a decision contributed to a low level of decision-making power even in those few areas of his authority. The typical decisions made by the teacher consisted largely of the procedural details in developing lesson plans.

A low level of decision-making authority and power continues to characterize the job of the classroom teacher today. The increased levels of specialization and a generally stronger background of academic preparation have, indeed, upgraded the quality of classroom instruction over what it was when the nation's classrooms were manned by the Normal School trained counterparts of today's teachers. However, the better trained and more able teacher of today still enters a profession that seems to have a single mold. That is, the teacher is hired to teach a certain number of students and a certain number of class periods per day, and all teachers are hired on that same basis. Thus when a typical school accumulated 30 "extra" students, a new teacher will be hired to perform the same job responsibilities for those 30 students as each of the other regular teachers performs with the other groups of 30 students in the school. The staffing patterns and designation of responsibilities seem to imply that the teacher at any particular subject and grade level is an interchangeable part. Thus, it has been the responsibility of teacher education to train elementary school teachers who can teach the full curriculum taught by the regular or specialized teacher in grades Kindergarten through Sixth. Teacher education institutions are expected to prepare a second group of teachers, hopefully with greater specialization in academic subject matter, to teach in grades Seven through Twelve. Since the components of the job known as "teaching," and the skills which a teacher should be able to perform are largely the same for all teachers at a particular subject matter and grade-grouping level, the job of training a beginning teacher has been an enormous and, considering all the aspects of the job of teaching, an unrealistic task for teacher education institutions. Any list of the myriad of tasks performed by a teacher--from giving a lecture to conducting small group instruction, from maintaining discipline to cranking a ditto machine, from some involvement in guidance and counseling to preparation of instruments to test academic achievement--should indicate not only the difficulty of the job of the beginning teacher, but the burden set upon the schools of education and the academic departments in the university as a whole. In view of the complexity of these tasks, it is an enormous responsibility to prepare teachers who are equipped to survive their immersion into the profession, and hopefully to come away from this baptism with the satisfaction, dedication, and competence which will make them true professionals.

The most recent study of the present characteristics of teachers in California, of July, 1962, indicates that one-half of California's teachers have left teaching before the ten-year mark of their classroom careers.[1] The largest number of those who leave teaching, either permanently or temporarily, depart some time between their second and fifth year of teaching experience. Non-school-related causes, such as pregnancy, moving out of state, or change of occupation, account for over half of the teacher dropouts. Studies indicate that about 40 per cent of these non-school-related dropouts can be influenced by school retention efforts.[2] There is a 25% drop in the number of women teachers between the ages of 30 and 39 [3] which is obviously due to the priority of maternal responsibilities in women of that age group. Thus the profession loses approximately 15% of its number due to the single phenomenon of maternity leave. Of those who cite school-related causes for leaving the profession, close to ninety per cent express some degree of dissatisfaction with the conditions and limits of their professional status.[4] This means that over fifty per cent of the total number of teachers leaving the profession can be influenced, to varying degrees, by retention efforts.

Studies of the causes of teacher dissatisfaction in California have indicated familiar areas of teacher concern: over-enrollment, clerical work, salary, student attitude and discipline problems, supervisory duties, etc. However, these studies indicate that in California the general dissatisfaction with professional limits and conditions is as important a cause of teachers moving out of the profession as is salary.[5] Thus merit pay, even if a plan agreeable to all could be developed, could not provide the solution to the causes of teacher dissatisfaction. The potential effect of efforts to improve the working conditions under which a teacher operates hold obvious relevance for supply and demand which various projections indicate we can anticipate in the next ten to twenty years. [6]

Present studies and figures about supply are significant only if the status quo in staffing patterns remains the same. Different conditions of professional responsibility would change the whole basis for attracting a sufficient supply to meet California's demand for teachers. It is only natural that a profession of significantly improved quality will attract a significant increase in the quantity of strongly qualified applicants for teaching positions. It is notable that data in research bulletins of the National Education Association show that the greatest teacher shortages (determined by numbers of less-than-full credentials) do not occur in those states with the highest professional requirements. The possible and desirable changes in the profession and the responsibilities of teaching, which this paper shall consider in a later segment, are motivated by at least two important areas of concern: first, the need to attract and keep teachers of high quality in numbers that can meet our present and projected need, and second, the need for a model, or series of models, on which teacher education institutions can base their choice of programs to give adequate and realistic preparation to people entering the teaching profession.

The Pre-Service Preparation of Teachers

Speaking in broad terms, there exists today two major patterns of teacher training both of which seek to combine professional and academic course work along with the field-practice which has always been held essential to the training of a teacher. In addition, teachers can now be certified in California with two years of Peace Corps teaching experience, regardless of professional preparation. Student teaching is the most common of these patterns of teacher training. The theory behind student teaching is that actual teaching practice should be preceded by sound professional preparation. There is an effort to identify prospective teachers and give them educational perspectives as they take academic courses. Student teaching assumes that the best way to achieve competence is by apprenticeship to an "old hand" at teaching. Usually, a student teaching program will exhibit these characteristics:

1. A series of foundation courses in education, such as in the psychology and sociology of education, followed by
2. General and/or special methods courses, followed by or concurrent with
3. A series of observations in the schools,
4. Culminating in student teaching experience, during which by law student teachers must spend a minimal number of contact hours in a position of quasi-responsibility for a class, where legal responsibility is still vested in the regular classroom teacher.[7]

The current major alternative to undergraduate or graduate student-teaching programs is the post-graduate pattern called "internship." In the internship pattern, the teacher trainee holds full classroom responsibility by becoming a partial or full-time employee of a school district on a contractual basis between the school and the parent college. The intern is a college graduate, is paid by the school district, and typically is supervised by both school and college personnel. Originally, internship referred to the fifth year of a systematic five-year program of teacher education. In this form of practice teaching at the graduate level after undergraduate courses and professional education, internship has a history in American education dating back to 1895. Within the last decade, however, internship has come to refer to a more specialized kind of program, usually exhibiting these five major characteristics:

1. Internship is largely designed for liberal arts graduates and others who have not had undergraduate training in education.

2. Characteristically, there is a strong university-school partnership in sharing the responsibility for the training of the teacher.

3. Internship programs are shorter, more compressed, and more remunerative than most other models of teacher training. For these reasons, internship also serves as a major recruitment device for liberal arts graduates.

4. On the job, the intern has full responsibilities for the classes he teaches, although he has the frequent aid of college and school supervision.

5. Rather than being the sequel to professional training, the practical experiences of internship are concurrent with and essential to that professional training.

There are at present at least two major patterns of internship. The first pattern leads to the Master's degree; this is the pattern typical in the East, and in California at Stanford, Claremont, and the University of Southern California. Basic to this training is a full year of internship teaching, featuring either a full or a partial load with proportionate pay based on the beginning teacher's salary in the public school. Prior to this teaching year, interns go through special programs of preparation in the summer featuring some practice teaching. During the teaching year, additional academic and professional course work may be taken at the university. With some programs there may be a summer follow-up of additional study. The graduate degree internship training may also be part of a two-year program. Most colleges which decide upon a two-year program normally have a limited offering of courses in the afternoon, do not have a summer school, or have a summer school without the offerings of the regular year, or stress the desirability of full-time graduate study. In the two-year internship for secondary school teaching sponsored by a number of Eastern colleges, the proportion of concentration is much heavier in the field of academic course work than in either the actual teaching internship or professional course work requirements of these programs. A second pattern of internship leads only to the teaching credential. The University of California at Berkeley has a typical program in this pattern: a full public school teaching load is assigned to the teaching intern, and professional course work is conducted in Saturday seminars. Offered through the extension division of the University, the program leads to a fifth-year credential, but course work does not count toward a degree.

Internship programs initially grew out of the need for compressed training of teachers to meet emergency supply and demand situations. As supply and demand adjusted, internship programs sought to avoid the label of being "compromise programs" by raising admission and training standards. It is ironic considering that they were once crash programs, but as they are presently constituted, internship programs may be described as "elite." One of their major uses has been in recruiting people with substantial academic preparation from strong liberal colleges, and those who decide to enter the teaching profession at a relatively late time. It must be noted that the actual numbers of teachers trained in the current internship programs do not constitute a significant influence in the area of supply. However, we really haven't tested internship as a model training device. The essence of internship is not the program requirements or remuneration for internship teaching. The emphasis is upon the nature and extent of the professional practice during training which is concomitant with professional course work rather than subsequent to it. Many academicians favor post-graduate internship patterns because they postpone education course work until after the undergraduate liberal arts training. But there are no reasons, either financial or philosophical, why the basic internship pattern could not be used in the current undergraduate student teaching programs. A compressed program of professional study would allow more under-graduate time for academic preparation. The only comparative studies of comparable internship and student teaching programs indicate no sacrifice in quality of performance in teaching or professional course work under the internship programs.

Current internship patterns influence teacher training as a whole with a positive and needed model of solid academic preparation prior to professional training, and the close university-school sharing of responsibility for that professional training. The fact that the internship pattern presents an organized fifth year of study and training, recommends it as a model to fulfill a legislative requirement for the fifth year of study if such requirement continues to be held feasible. Colleges preparing large numbers of teaching candidates, such as San Jose State University, should be particularly commended for exploring the internship approach to the training of elementary school teachers in the fifth year, and thus developing a model for other institutions concerned with the fifth year requirement for elementary school teachers. If the internship pattern is to compete in quantity with the number of teachers produced by traditional programs, or to substantially replace them, then broader internship programs must be developed, accompanied by greater credentialling flexibility. Present requirements make internship credentials difficult to obtain in some respects, and the admission requirements for the most of the present internship programs in California are, on the whole, unrealistic if the internship pattern were to become a major source of teacher supply in this state.

In summary, the patterns of internship training present some obvious advantages which should influence all of teacher education. Because of the restricted nature of most internship programs to date, it is not possible to make definitive claims for this pattern over the broader traditional pattern which still trains the great majority of teachers. There are several specific contributions of the internship pattern which should have an influence on the future guidelines for education of teachers. First, is the realization that a well-planned program may greatly shorten the hours of professional education course work needed to prepare teachers for full teaching responsibility without sacrificing the quality of professional preparation. Second, the crowded time spent in twelve to fourteen month internship programs has shown the critical need for adequate preparation of teaching candidates through real practice before they assume full teaching responsibility.

Some universities using internship programs, such as Harvard, run special summer practice schools. The expense of this model may well be preferable to the limited value of relying completely on local public summer schools for practice training of teacher candidates. Perhaps the model of special summer teacher preparation which holds the most promise for the future is the training device of "microteaching," a scaled-down teaching encounter in class size and class time which aims also to break down the complex act of teaching into simpler components so that the learning task will be more manageable for the beginner. Also, because it is a constructed situation teachers can be provided with as many opportunities as needed to reteach the same lesson to different groups of students to see if they can improve.[8] This teaching situation is real, but simplified in logistics, and therefore practicable for large numbers of teacher candidates.

The third and numerically by far least significant certification route is that provided for returned Peace Corps volunteers. The obvious motivation for certification of persons with Peace Corps teaching experience is that the dominant program of preparation, student teaching, is based on the premise that the candidate has no teaching experience. It is hard to argue that such a program is appropriate for persons having two years of successful teaching experience and who have demonstrated high motivation for teaching. It is equally unfortunate to assume that two years of unsupervised practice, however meritorious, can completely replace professional preparation. This is true even though such teachers are usually successful. It has been the experience of training institutions that the teachers who are most successful initially change most as a result of training and thus are potentially the most outstanding candidates and future teachers.

A further and critical dimension of the pre-service training of teachers is supervision. The traditional and most common pattern of supervision is that provided by the resident teacher's supervision of the student teacher who takes over the regular teacher's classes for a short period of time. Normally, in large teacher education programs, this supervision is more important than that provided by the university or college through an extremely limited number of visits by professors of education. In universities that have substantial graduate programs in education, where advanced degree candidates are used as supervisors, the college may play a closer role in the supervision of beginning teachers, whether they be student or interns. Certainly one of the strengths of internship programs is the normally higher degree of contact between the intern and university-supplied supervision. In the Stanford internship program, for instance, both a resident teacher supervisor and a university supervisor, who is a pre-doctoral candidate in education and a specialist in the teaching field in which he is supervising, visit and confer with the intern teacher on a frequent and regular basis during the year of internship (an average of sixty observation reports are filed for each Stanford intern). This dual supervision is one means of achieving the benefits of the university-school partnership in the training of teachers. Naturally, this model of supervision is most feasible in colleges which have the graduate programs in education that can provide trained personnel for supervision, although some colleges hire equivalent full-time supervisory personnel.

In recent years, the Los Angeles City School system has made imaginative and what it regards as profitable use of a system of supervision similar to James Conant's idea of the "clinical professor." The City of Los Angeles pays half the salary of each supervisor in this program, the other half being paid by the participating colleges which at this time include University of California at Los Angeles, University of Southern California, Pepperdine, Mt. St. Mary, and San Fernando State College. At present there are thirty-eight full time supervisors in this program, each of whom was selected from the public school teaching field by the district, on the basis of evidence of outstanding teaching. This supervisor is designated by the university as "teacher training coordinator." These teacher training coordinators work closely with the university, participating in the methods courses, and providing regular and close supervision of student teachers. The teacher training coordinator's salary equals the amount he would be making as a regular teacher. This system allows for supervision featuring close cooperation between the university and the school, permits a greater number of classroom supervisory visitations, and is less expensive than the system of paying professors to perform the college's end of supervision. Further, it avoids the situation where the time spent by a professor in supervision leads to his having to default in the area of curriculum leadership in the university. It becomes undesirable, however, when colleges and universities substitute these personnel for full-time professorial curriculum specialists.

In determining the effectiveness of supervision, the benefits of the university-school partnership are noteworthy. Through such a partnership, supervision can more often insure consistency with the aims of the program in which a student teacher is enrolled, can provide the needed integration of theory and practice from the standpoint of both the school and the university, and can insure the university's continuing contact with and training of its supervisors. The authors of this report feel the benefits of the university-school partnership should be carefully considered in any plan to license supervising teachers, such as those currently being considered in the Legislature. Cooperation between the schools and the universities in training and maintaining supervisors would appear to be one of the most profitable present and future concerns of those interested in upgrading the quality of teacher education.

The Present State of Credentialling

It is not the intention of the authors of this report to play the role of either defender or attacker of the Fisher Act, which determines much of our present credentialling structure. The effects of the Act are strongest in the area of elementary school teacher education, and there has appeared to be a notable decrease in the number of potential elementary school teachers since the Act was passed. Whether this is a real or apparent phenomenon, and there are certain indications of adjustment to a temporarily disturbed balance, it is apparent that much of the confusion concerning credentialling could be cleared away by careful counseling of potential teachers in the colleges. There is, for instance, more flexibility within the credential structure than many of the Fisher Act's antagonists have admitted. Even so, the present credentialling structure, together with its administrative interpretations in the Education Code, is cumbersome and often exhibits obvious inequities and inconsistencies, as in the distinctions between what is and is not academic, and the purposes for which such majors may be used. Further, the Act has unwittingly encouraged subterfuge by schools of education in shifting courses from one department to another, or changing only the listed number of credit hours, while giving identical course work.

These problems underlie the basic handicap of legislative prescription. A profession can never be any stronger than its leaders, and leadership cannot be legislated. It is understandable that the Legislature becomes impatient when a profession does not police itself. In that case, however, the answer should come in encouraging and supporting legislation for exemplary programs, rather than in punitive and limiting legislation. The Legislature might supply financial incentives to districts and universities which will adopt exemplary programs. When it becomes obvious that certain teacher training institutions are going beyond the minimum standards, it would be logical for the Legislature and the State Board of Education to exempt these institutions from the point-by-point compliance with the letter of the credentialling law. Too great a number of minimum standards will, in effect, create maximum standards.

The need to retain flexibility in credentialling procedure, particularly to encourage experimental programs in teacher training, is crucial for the improvement of teacher education. The authors have little argument with the removal of such undesirable phenomena as the under-graduate education major, yet have a particularly strong hope that the legislative involvement in the credentialling structure shall not lead to rigidity and loss of flexibility. For this reason, we feel the State Legislature must be strongly discouraged from adopting any one viewpoint toward how the teachers of tomorrow should be trained. There are many ways to train teachers, much research is yet to be done on the relative effectiveness of these various means, and at this time we strongly feel that reliance upon inflexible credential structure and teacher education requirements is extremely undesirable. It is important in regard to a profession that legislation should not attempt to define the mechanism by which members of that profession are to be trained, and that the most positive role of legislation is to define the results that are to be desired.

The Present in In-Service Teacher Education

Although there are exceptions, the general status of in-service training is far less satisfactory than pre-service training at present. After what is possibly marginal pre-service preparation, which cannot hope to train candidates specifically in all the component tasks of the present model of teaching, the beginning teacher is warmly welcomed to the staff, summarily oriented, and then usually abandoned to his classroom to teach on his own. Unfortunately, too many do poorly, and more importantly, their weaknesses too often remain unremedied or even undetected.

It is not uncommon for the beginning teacher to be given the heaviest load or the most difficult and unrewarding classes. For the teacher without the experience and skill to put educational life into these classes, his impression is that he is teaching the most disagreeable students. One cannot deny that they are the educationally needy, but neither can it be forgotten that academic and personal merit must not be confused. Well-prepared professional teachers may well find students' educational status disagreeable, but the same individuals will have many qualities to commend them as individuals. Teachers must be prepared to recognize and value these personal qualities. Often, the implicit policy is that if he survives these beginning years with a minimum of noise and disturbance from his classes, he will be given "better" teaching assignments. In all but the atypical team-teaching situations, few teachers have any real professional contact with their colleagues. Teaching is seen as a private matter between the teacher and his students. Any interference in another teacher's class work is often considered a violation of professionalism. As a result, the formative years are for many not a period of experimentation and professional growth, but strictly a matter of survival and professional isolation.

While we can give a general description of the current categories of in-service activities, a detailed account of the administering and financing of in-service programs, of the numbers of teachers involved, and relative quantitative information, would not add substantively to the tenor of this report. A report on in-service training is being prepared for the California Association of School Administrators by a committee under the chairmanship of Dr. Henry M. Gunn, and should be available early in 1967. The probable cause why more is not written on in-service programs is that the programs tend to be stereotyped and of a low level of imagination.

A study of in-service programs made in April of 1959 indicates the general nature of in-service education today.[9] The most significant categories of in-service activities, listed in decreasing order of importance indicated by the numbers of schools carrying on these activities, are faculty and department meetings, conferences, consultant services, workshops, teacher orientation, institutes, preparation and selection of instructional materials, intervisitations, and various exhibits.[10] Over one-half of the state's schools require only faculty meetings or institutes. Most in-service programs take place outside of school hours, and there is no significant extra pay for these in-service activities and little commitment on the part of teachers to them. The only significant released time occurs in the case of inter-school visitations. The actual status of in-service education is even weaker than the statistics indicate. Most faculty meetings are pre-empted by administrative concerns, rather than substantive professional topics. Institutes are often pre-school speech making with little concentrated, coordinated, or systematic study.

Present in-service programs are usually initiated and determined by the superintendent of the school district, the assistant superintendent, or the county office, depending on school district size.[11] School principals play a very small role in determining and initiating in-service programs, participating in less than ten per cent of these decisions, and even the scope of activities, selection of content, and the evaluation of programs is performed more often by the superintendent than by the teachers. The generally low status of present in-service programs, with the few notable and hopeful exceptions, is further indicated by the fact that in 1965 over forty per cent of California's school districts did not accept in-service activities, travel, or vocational experience in lieu of college credits for placement on salary scales.[12] In-service training presently exercises very little influence on the profession. At least one measure to be explored by the state, would be the use of credential levels tied to in-service training. Presently the lack of this kind of motivating factor greatly impairs the effect of in-service training. Happily there are exceptions to this. For instance, under the leadership of Principal Scott D. Thomson at Cubberley High School in Palo Alto, the teachers in the English Department initiated an in-service program in linguistics, taught by the English Department Chairman who is currently on leave to write a linguistics text. A course meeting one afternoon per week was set up on a district-wide basis.

Two other important dimensions of in-service training may be seen in the general role of supervision, and in college and university courses offered outside school time and during the summer for the professional development of teachers. The in-service training dimensions of supervision are limited by a number of important factors. To some, supervision is threatening in that job security is frequently at stake. To others, it is irrelevant, since the supervisor often is not trained in the teacher's discipline and, therefore, does not fully appreciate unique curricular problems. In general, supervision tends to be evaluative rather than instructive. It is very seldom that the areas criticized in a supervisor's report are reevaluated before a relatively long period of time has elapsed. It is the author's feeling that the in-service role of supervision can and should be developed more fully. Schools can be charged with the development of such supervisory responsibilities as will be proposed in the section of this report on the future of in-service training.

The most common type of university involvement in in-service training comes in the form of courses offered by universities and colleges which teachers take either in evening or summer sessions. A major incentive for taking these courses is advancement to higher salary scales. Almost seventy per cent of California's school districts allow credit for any subject taken, regardless of relation or lack of relation to a teacher's subject area.[13] A fraction more than fifty-nine per cent of the state's school districts have "professional growth requirements," usually consisting of four to six college units.[14] The desirability of setting certain limits on the subject matter of course work which can contribute to salary classification, and increasing the role of the schools in determining at least part of the content of university courses which serve an in-service funtion, are two important concerns to be considered by schools and school districts in the future.

One of the promising examples of the way in which a school district can meet the need for continuous education in some new and interesting ways is provided by Marshall High School, in Portland, Oregon. This school, along with several others, is building released time for teacher training into the school's days. Other school districts are assigning a lighter load to beginning teachers, and also a lightened load for the experienced teachers who have the responsibility of providing beginners with the professional training they need. More and more schools are providing sabbaticals and supplying tuition grants for carefully planned and approved programs of study and research. Many school districts provide opportunities for inter-school and intra-school visitations by other teachers. National year-long or summer institutes are becoming increasingly important, such as those sponsored by the National Science Foundation for mathematics and science teachers to prepare them to teach the new curriculums.

In recommendations growing out of the previously cited study of in-service training of teachers,[15] several important approaches were emphasized. This report suggested that a large portion of in-service training for beginning teachers should concentrate on such problems as clerical work, supervisory duties, school disciplinary problems, behavioral problems in the classroom, student impertinence, teacher-administration relations, and an explanation of the problems involved in procuring finances in the school budget for teachers' salaries. It was suggested that there should also be a more thorough and personalized orientation program, paralleled with equal or lighter teaching loads for beginning teachers. A further proposal for additional in-service training suggested that schools should consider employing clinical psychologists to work with beginning teachers and beginning administrators to assist them in handling difficult human relationships with faculty members, parents, pupils, and administrators. The report recommended provision for in-service training of administrators, possibly with periods of classroom teaching, to keep them in touch with the classroom situation. And it was proposed that in-service training might further help the teacher-administrator relationship by including in the orientation of teachers an exploration of the problems confronting school administrators.

All of these steps and suggestions suggest some visible areas of progress which are currently possible. At the same time, the whole milieu of the school should be examined. The question should be asked whether the informal and formal cultures of the school work toward a continuous upgrading of professionalism among the staff, whether good teaching is rewarded, and whether innovation and experimentation are encouraged. It is possible that there may be strong factors in the school that constitute a subterranean but nevertheless strong "in-service program" that breeds anti-intellectualism and cynicism in the teacher, that isolates the teacher from real professional contacts with his colleagues, that corrodes creativity and dedication. These questions are, perhaps, rhetorical, and the answers vary from school district to school district. It is the authors' belief that the points raised in this kind of questioning indicate a need for broader use of in-service training and, possibly, certain facets of change within the school organization which would increase the receptiveness of teachers to the potential of in-service training. The importance of in-service training is indisputable, and thus the tragedy of its current state is all the greater. In in-service training we have the one sure means of reaching the greatest numbers of teachers. We need in-service programs which can bring the teachers the kind of professional development and stimulation which can have real effect on the quality of instruction that each child received in the classroom.

Merit Pay

There have now been enough experiences with school boards' consideration of merit pay to see a pattern which leads to both an approval of the idea of a differentiated pay scale and a rejection of the actual proposals for merit pay. The basic idea of merit pay is one that is largely acceptable to all: that the best teachers should get the most pay, and that "best" should be determined on the basis of quality of performance and not on years of experience. However, the actual proposals for merit pay have consistently hit a snag at the point of establishing the criteria by which to judge the levels of professional merit in teachers. The questions of who is to judge, what specific criteria are to be followed, and how both the judgment and the criteria may be made objective have thus far been questions which have not had answers sufficient to bring an actual merit pay system into accepted use. Thus, in a typical instance, after a two-year study of merit pay system proposals, the Palo Alto Unified School District rejected all pending proposals, while reaffirming faith in the correct logic and desirability of the principle of differentiated pay. Despite the desirability of this goal, the arguments against merit pay have understandable justification. What contributes to the greatest subjectivity in the decisions of evaluators and selection of criteria for a differentiated merit pay system is the lack of differentiated responsibilities within the teaching profession. Merit pay differentiates only how well teachers perform the same basic professional responsibilities. Teacher A's competence in teaching 150 juniors and seniors in high school would, typically, be compared to Teacher B's competence in teaching the same subject, often from the same curriculum base, to another group of 150 students. Moreover, unless merit teachers would have responsibility for significantly larger numbers of students, there would be justifiable disgruntlement on the part of large numbers of parents whose students did not have merit teachers.

If differentiated pay is to become a reality, and all logic suggests that it should, then the level upon which differentiation is made must be concrete, objective, and relatively indisputable. This suggests that the initial differentiation must come in varying levels of professional responsibility which each teacher fulfills. This is one important point of support for the new assumption of a differentiated teaching staff which is presented in the latter portion of this paper.

The arguments which can be legitimately advanced against merit pay may all be applied to the principles of teacher recognition in the master teacher bills presently before the Legislature. Although the idea behind these bills is both logical and admirable, it is hard to see how they can improve on any of these objections raised in the issue of merit pay. In order to recognize different levels of performance through differentiated pay, the requisite step is to first differentiate the responsibilities among the various salary level groupings in the staff.

Teacher Education and Staffing Patterns

Towards a Differentiated Staff. Teacher education is not a separate, isolated entity. Rather, it is an activity or a series of activities designed to bring about better educational opportunities for our children. Teacher education should serve the ends dictated by the schools; as such, the education of teachers is affected strongly by conditions in the school. In other words, the structure of the schools provides the mold of teacher education. In looking forward to the future in teacher education we should strongly consider the need to change this mold.

The rationale for the proposals in this section is based on a number of considerations, many of which have been previously mentioned. First, is the continual desire to have some realistic basis, on which teachers, school boards, and administrators can agree, to provide differentiation in the salary scales on some basis of the job being performed, rather than the number of years of teaching experience.

Second, we have the feeling that at least some jobs within the classroom should have equal monetary reward to those jobs in administrative and non-teaching positions. A longer and more realistic line of promotion within the classroom would be a fundamental aid to teacher retention.

Third, teacher dissatisfaction studies indicate that factors connected with limits of responsibility and power involved in the nature of the job itself are just as important as and often more important than the obvious factors of pay and class size. Even if increased pay and reduced class size were possible in all situations, these studies of teacher dissatisfaction suggest that teachers would value improvements in the nature of the teaching role itself just as highly as material benefits.

Fourth, the influence of a teacher who is interested and adept in curriculum innovation is currently limited by a staffing pattern in which nearly all teaching positions have the same job responsibility.

Fifth, the lack of differentiation in the professional responsibilities of each teaching position on the staff, and the credentialling structure which is parallel to the lack of differentiation in the schools, encourage minimal academic preparation. While further education is usually linked to salary scales, it is seldom linked to the considerations of what kinds of post-graduate course work and in-service training meet specific needs and responsibilities of the job he is performing.

Sixth, we feel there is a fallacy in the idea that somehow we need to attract only greater and greater numbers of higher quality teachers to fill the classrooms of California. As long as teaching job responsibilities remain undifferentiated, the numerical figures for high-quality people demanded are impossibly beyond the supply. If we can separate the skills required to fulfill the job of "teacher" into different staff functions to be filled by different people, trained with appropriate differentiation, then we can direct "high quality" people into the specific positions requiring highest-order skills.

Seventh, the problem of training teachers adequately to perform with competence in the responsibilities which they must assume in teaching would be more realistically approached if our universities and colleges could prepare teachers for specific responsibilities and groups of responsibilities, defined by staffing patterns based on a differentiation of the degrees of complexity in skills, knowledge, and experience required to perform competently in a specific position.

Educational innovations that involve major areas, such as staffing and scheduling, are often viewed with distrust by those who consider the financial cost. In his book, Images of the Future, J. Lloyd Trump cites one case of staffing innovation which serves as an example. Sixteen teachers representing 150 teaching hours were replaced by five full-time teaching specialists, five full-time generalists, the addition of 200 hours of instructional assistance, 100 hours of clerical assistance, and by 50 additional hours of miscellaneous help. The annual cost of this new differentiated staffing pattern was less than the traditional staffing.[16]

Within the differentiated staff we can devise alternatives to the self-contained classroom which still protect the psychological identification of the child with a responsible and sympathetic adult, and at the same time allow for contact with more than one adult. There is no evidence that children need to experience insecurity when changing teachers or rooms though such insecurity is often the result of indiscriminate change. With children as with adults, change stimulates. Not only can and should the differentiated staff protect the teacher-child relationship in the elementary school, but it can enhance that relationship in the secondary school. Secondary schools need to improve in this regard, and differentiated staff responsibility will allow for specific time to be channeled in the direction of individual attention and counseling. Further, in reference to the teachers, no person can be fully competent for all the areas of the elementary school curriculum today.

There is a wide variety of possible ways in which a differentiated staff organization can be arranged. One of many possible designs as a beginning point for thought, experimentation, and implementation of the idea of the differentiated staff, that proposed by Temple City, California is shown on page 313 in Figure I.

It should be noted that in this plan promotion is not a function of length of service. One could start, and remain indefinitely as an associate teacher, receiving annual increments to the maximum in the associate teacher salary scale only, or conversely, a teacher could move directly from associate to senior teacher in unusual circumstances. Note too, that tenure is given only in the lower categories. As this plan is now conceived, the curriculum associate and the senior teacher jobs are contract positions, though senior personnel are tenured at the staff teacher level and therefore no change in the present tenure laws is required. In this plan, senior staff teachers receive more pay and recognition, but perform different assignments of greater responsibilities for which they are uniquely qualified.

In addition to the four job descriptions in Figure I, clerical and supervisory assistants, or teacher aids, are part of the conception of this illustration. These are part or full-time staff members, not necessarily teachers, who for a relatively small salary can assume non-professional tasks which to date have consumed many hours of teacher time (typing, dittoing, lunch room supervision, taking attendance, etc.).

FIGURE I

BASIC STUDY STRUCTURE

DIFFERENTIATED STAFF

Temple City, California

Title	Typical Preparation	Typical Compensation	Job
Curriculum Associate (Contract)	Doctorate	$14 - 18,000	Anticipator: Shapes curriculum. Gives direction to what curriculum should be in the future and how subjects should be related to each other.
Senior Teacher (Contract)	M. A.	$11 - 14,000 (12 months)	Conceptualizer: Makes explicit the concepts and goals in each course or grade level.
Staff Teacher (Tenure)	B. A. + 1	$7500 - 9000 (10 months)	Illustrator: Translates units and goals into highly teachable lesson plans.
Associate Teacher (Tenure)	B. A.	$5800 - 7500 (10 months)	Doer: Carries out the given plans.

The current proposal for a differentiated teaching staff with a salary range of from $5,800 to $18,000 is feasible within the resources presently expended by the average California school district.[17] The primary need for outside assistance would be to finance a transitional period during which some staff members would be compensated at a disproportionate rate to protect their present staff rights. This is the same kind of a "grandfather clause" that has been included in most merit pay proposals. The difference between this proposal and ones suggesting "merit pay" is that here the teacher receives more money for doing a different job.

Whether the state actively solicits districts, or whether school districts apply to the state for assistance in reorganizing for a differentiated staff structure, the following conditions are recommended as prerequisites to assistance in order to assure that the concept will not be miscarried:

1. There must be a minimum of three differentiated staff teaching levels, each having a different salary range.

2. The maximum salary in the top teaching category must be at least double the maximum in the lowest.

3. Teachers in the top salary level must have substantial direct teaching responsibilities.

We would also recommend that the state provide incentive funds to assist districts which elect to implement a differentiated teaching staff, to help defray and direct transitional costs for revisions in instructional materials, facilities, and equipment. It is important to note that we cannot now define precisely what the differentiated responsibilities should be. Put bluntly, we do not know what an $18,000 per year teacher should do differently from a $5,000 per year teacher. But the profession needs to be encouraged to find out.

The full implementation of an idea of the differentiated staff would require innovation in the basic organization and structure of the schools. In our present typical systems, we place restrictions on the curriculum by having all subjects meet for the same number of minutes per period, and periods per week, or portions of the class day in elementary schools, for pupils at all levels of ability. We have divided all days and weeks into equal segments and poured the curriculum into these molds. There are many reasons for this, but perhaps the most important is that other arrangements were not particularly feasible. Due to the great difficulty in scheduling large numbers of students, teachers, and rooms, it is understandable that educational decisions gave way to scheduling demands in the past.

Now, however, spurred on by new social and education problems, and the advent of electronic data processing and high-speed computers, educational decisions can shape the schedule. Time, space, students, and teachers can be used more intelligently to bring about greater learning. Given greater flexibility and freedom in the schedule, a school can use its professional staff in a more professional way. The expert, gifted lecturer can lecture to eight and ten times more students than the typical thirty. In the kinds of teaching adaptable to the lecture method, it should be noted that quality of instruction is related to the quality of teaching and not to the class size. Combining the ideas of the differentiated staff and such organizational alternatives as are provided by flexible scheduling, and new alternatives in the use of materials, as in programmed learning and computer-assisted instruction, we can look forward to school systems in which teachers have a hand in the educational decisions regarding the implementation of school policy and curriculum, so that they may begin to function as professionals and not just as isolated artists. Once we get away from the concept of one teacher for one class, and move to the concepts of large and small groups of students, we shall find ourselves facing completely new questions which lead to answers that suggest totally new combinations of teachers, students, staffing patterns, and teacher education.

The first full implementation of the concept of the differentiated staff may take place in the Temple City High School District, in Los Angeles, beginning September 1, 1968. Between now and that time, school administrators and the total staff will be involved in a study intended to draw the specific lines for differentiation of roles of responsibility. When years of experience and college credits are no longer the sole criteria, this becomes a new and provocative question. In their adoption of the differentiated staff proposal, teachers and administrators in the Temple City High School District have decided upon an approach to study the problems involved in assuming the differentiated staff. With the full cooperation of the California Teachers Association, the American Federation of Teachers, and the involvement of the total staff, this district is seeking to adopt a more logical and educationally consistent staffing pattern while preserving staff harmony. The Temple City High School District should be commended for its commitment to so logical and yet radical an innovation, and will hopefully provide the first concrete example of the superior instructional and professional effectiveness of the differentiated staff.

THE FUTURE IN PRE-SERVICE TEACHER EDUCATION

It is our aim and recommendation that in the future, instead of training all candidates alike we should begin training individuals for specific responsibilities of professional staffs. The position a candidate is trained for will depend on both his career goals and his abilities. By moving away from staffing patterns without differentiation, we can bring about better and more specialized training by focusing on specific roles. For the future in California teacher education, there should be a blurring of "pre-service" and "in-service" distinctions, due to a longer and continuing commitment of schools of education and universities at large to the education of the teaching candidate and the teacher.

We propose a series of certification levels . These levels would depend upon the performance, the ability, and the experience of the teacher. Typically, the teacher would enter the profession at the lowest level, where he could stay if he wished. If and when he qualified for higher levels of certification, he could take on higher levels of responsibility. This type of arrangement would remove from the profession the dilemma of the all-or-nothing certification decision at the very beginning of a teacher's career, and would still leave open the alternative of by-passing intermediate levels if, for example, formal training can be appropriately substituted for experience. There could logically be a sequence of certification levels, paralleling stages of staff differentiation such as those cited in this paper.

In the future education of teachers, a teaching candidate's academic specialization should follow closely the particular teaching field and level he is proposing to enter. An elementary school teacher might have a major in language and structural linguistics, or in child development or a subject specialization. An eleventh grade English teacher might have a strong background in American literature. A Biology teacher should be trained in Biology not more vaguely in "science." Upon a base in general liberal education, teachers should have strong content preparation in the area in which they would teach. Further, teachers should be trained especially for the many roles that are generally assumed under the name of "teacher." For instance, there would be specific skills training for lecturing, test construction, evaluation, questioning, diagnosing learning difficulties, and counseling. Performance in these areas could be the basis for later staff specialization.

Another focus of attention might be on training teachers as directors of educational systems. Whereas the teacher was once the entire instructional system, technological advances and educational theories are making available many educating devices. The teacher of the future should have at his disposal many instructional aids such as stimulators, programmed materials, videotapes, films, computer-based learning systems--all easily available to him. Given this high-powered support, the teacher will need special training in when and how to use these facilities. As director of a large system, he will have to know the abilities of the students and the potential applications of each of the system components. While technology will have freed him from many instructional responsibilities, he will now take on a new burden of applying systems with intelligence and sensitivity. In this situation, the concept of continuous training becomes imperative as new knowledge develops and new technologies become available.

In future pre-service preparation of teachers, we foresee three types of training activities.

First would be acculturation of the trainees to both students and schools. Trainees will be made aware of the school culture and some of the problems faced by both students and teachers through a series of clinical exercises. Most of these will involve visits to the schools with specific behavioral objectives to be observed.

Second, training in the specific skills of teaching will be given great attention. For instance, a trainee will practice specific ways to elicit and reinforce student response in discussion. In the classroom, in micro-teaching, in similar constructed teaching experiences, and in simulated teaching situations, trainees will be given supervision and instruction in such component skills of teaching.

Third, a much greater emphasis will be given to developing the abilities of teacher trainees in educational decision-making. As the role of some teachers assumes more responsibility and decision-making power, and as the teacher becomes director of educational systems, the teacher's decision-making skill will play an even more important role. Systematic training at both pre-service and in-service levels will be necessary.

Up to now we have followed a kind of cumulative theory. Teacher education has seemed to follow the logic, "if some is good then more is better." The obvious fact is that some tasks the "teacher" now performs do not require much training - such as turning a ditto machine, supervisory duties, or monitoring reading and study periods. Differentiation of teaching staff responsibilities should take this into account, and schools of education should train candidates accordingly. Once we differentiate the teaching jobs we must differentiate the training. Training programs will be terminal for some, and only a first stage for others. Aspiration will be one basis of training differentiation; criteria based on performance will serve as another.

Teaching candidates will be able to begin training either as undergraduates or after completing their liberal arts work. Some staff levels, however, may not require a four-year degree. In the future, the education of the teacher must become a university-wide effort. Typically, and ideally, schools of education might serve as coordinators for this university-wide involvement in teacher education. Incentives for this development might be provided by increased flexibility of credentialling structure, by financial inventives provided by private foundations, state and federal grants, and the increased curriculum innovation which could logically be expected in the full utilization of the concept of the differentiated staff.

As a typical and substantially altered pattern of training, at least for the higher levels of the professional, differentiated staff, we would suggest that formal education courses be minimized at the undergraduate level, and in their place be put supervised experiences in the schools. While acting as teacher aids and paraprofessional help, they would perform services to the professional staff and at the same time go through clinical exercises. Their university work in education should be limited to seminars, in which they would prepare for these exercises in the schools and evaluate their findings. Further, the university-school partnership could be strengthened by using these trainees in the role of research assistants for joint university-school projects. Upon completion of the degree work, they would spend greater amounts of time in the schools as paid personnel with full instructional responsibility for limited assignments. The certifications here would be as beginning teachers. After a period of one or two years, they would return to the university for intensive training in both professional education and in their academic specialties.

One of the most positive innovations in teacher education, having both pre-service and in-service implications, will be the development of criteria for determining acquisition of skills on the basis of performance, rather than time spent in the classroom. Applied to pre-service teacher education, performance criteria could make James Conant's idea of "demonstrated competence," as a basis for credentialling, realistic. The idea behind performance criteria is that certain component tasks may be identified, which together indicate, to a large measure, the degree of competence in any learning field which has behavioral application. It is not assumed that specific performance criteria for, let us say, the staff teacher level in the differentiated staff, will entirely define the responsibilities of that position. In any case, the whole is greater than the sum of the parts. Yet, the sum of the specifically and carefully designated parts will enable us to identify competences, with implications for all fields of learning. It is research in this sort of a widely productive area which must be especially encouraged and supported.

University training, the experience of trainees in the schools, and measurable levels of performance would provide the basis for qualifying to the next level of certification. Such a pattern as internship would be a highly concentrated program for those who have now chosen the undergraduate professional preparation period. It would be an attempt to telescope many of the experiences outlined above. The internship pattern would be provided for those people who decide to enter teaching after completing their undergraduate degrees. Here too, the programs would be three or four years in length, post-baccalaureate, with at least one year of concentrated work at the university, and would involve continually greater employment by the schools. Preparation during the latter years of teaching would depend upon the career goals of the teacher and both the level and specialization to which he aspired.

This kind of a new design for teacher education calls for a very intense and close-working relationship between the university and the school. Also, it calls for radical readjustment in the amount and staging of training performed by both institutions. Typically, the school should take on a much wider role in the education of teachers, and the university should take on a much wider role in the education of teachers, and the university should take on a much longer commitment to its candidates. However, the close contact and cooperation that will be needed is seen as a major benefit to both institutions. New findings of educational research will be disseminated more quickly to the schools. The research so necessary to the improvement of California education will be facilitated by this partnership, and will arise from the common concerns of university and school personnel.

One of the key people in the partnership between university and school for the training of teachers would be the supervisor or critic teacher. Patterns of supervision involving "clinical professors" drawn from the schools and linked to the universities, should be explored. Much more attention should be given to the training and responsibility of the supervisor. He should have a foot both in the university and in the school, being a demonstrator, trainer, and generally a synthesizer for the beginning teachers under him. This particular educational role will be one clearly identified in the professional staff. One question which the universities and the schools together must answer will be whether the complex requirements needed to be a good supervisor justify a breaking down of the supervisory tasks, and the training of a number of supervisors to provide professional instruction and evaluation for trainees and teachers.

Possible relationships between teacher personnel and the new Regional Laboratories and Research and Development Centers funded by the federal government need exploration. New patterns of staff in-service training and research cooperation will need to be developed and exploited.

In summary, we hope to look to a future in teacher education where the colleges and universities will have flexibility to explore carefully considered planned programs of teacher education. Moreover, it is hoped that staffing structures in the schools will enable teacher education institutions to train candidates more realistically and specifically in the teaching skills of specific teaching roles. The academic quality of teacher preparation should be enhanced by greater effort at the university-wide responsibility for the education of the teacher. It should be noted that much of what is possible in teacher education is dependent upon the structure of staffing in the schools, upon staffing patterns of teacher education institutions, on the flexibility of those structures and the delineation of specific responsibilities within staffing patterns. The basic idea of the differentiated staff is the hinge upon which the door of teacher education in the future can best swing.

THE FUTURE OF IN-SERVICE TRAINING

In order to insure continuous professional growth within the present framework of in-service teacher training, an initial area to be developed is supervision. The dictionary defines supervision as "the direction and critical evaluation of instruction, especially in public schools." It is our contention that the process of supervision is held in low esteem by teachers largely because only one aspect of this definition has been stressed: critical evaluation. School administrators bear the heavy responsibility for insuring skilled instruction for children in response to the desires of parents and all those vitally concerned with education. We raise no quarrel here. The problem is that the other aspect of supervision--providing direction for instruction and aid to the classroom teacher--remains virtually untouched.

The lack of instructional direction in supervision particularly affects the newly certified teacher in our school systems, who as previously pointed out, is often assigned the most difficult classes and least desirable extra-curricular activities. This beginning teacher is typically "supervised" by several administrator visits, and may periodically be told "how he is doing." Unfortunately, he is too often given little direction on how to overcome specific weaknesses and improve his performance. Improvement must be largely self-directed. A career pattern in classroom methods is thus often initiated by the restricted range of instructional strategies which "work" in solving such problems as the low-order, yet necessary, tasks of maintaining reasonable classroom control. Critical evaluation in supervision, without instructional aid, leaves the fledgling teacher with few resources for improvement other than his own trial-and-error experience. This type of learning, incidentally, can just as easily cripple as create teaching quality. Isolated in his own classroom, struggling to master new curriculum materials, grappling with the daily demands of upwards of 160 students, the beginning teacher can often do little but fight a rear-guard action. The press of work often keeps him from any systematically thoughtful criticism of his own skills. Patterns become established. Self-expectations narrow. Secondary problems are ignored. The teacher is on his own. If he is a good disciplinarian and "keeps a taut ship," little critical evaluation will come his way. If not, he is in trouble--and too often he is still on his own!

This is not just a problem of the burdens we put on the beginning teacher, which can be balanced by a more realistic, gradual assimilation of new teachers. Rather, in limiting the concept of supervision to evaluation, we have closed off one of the most potent avenues of direction and aid for all teachers, and have thus frequently isolated the teacher in his classroom. The contrasting concept of the "open classroom" that makes several sources of direction and aid available to the teacher through instructional supervision, leads to the idea of a new face, a new structure for supervision. We feel that supervision's new structure should place the responsibility for direction and aid in instructional supervision with the teachers as a group. Supervision by colleagues is one long-needed component in the establishment of greater professional responsibility for teachers, and increased exchange of ideas and aid through observations, critique conferences, and sharing of materials. Presumably, technological aids to supervision, such as videotaping, and the use of demonstration classes - as in micro-teaching - could strongly influence and assist colleague supervision.

A change from the idea of the classroom as the teacher's impregnable fortress to that of the open classroom is implicit and essential if these in-service dimensions of supervision are to be developed. The obvious place for supervision by colleagues would be within a department or grade level because of the commonality of content and methodological procedures. Here materials and insights might be shared among those bound by common interests. Many departmental or grade level meetings might take on new dimensions of true in-service training. Colleague supervision and visitation would provide the concrete basis to discuss such methods as lecture techniques, small-group discussion, test construction, and specific curricular emphases. With this open classroom setting, the school should truly begin to use its specialists. The aid of a reading specialist in screening and diagnosing reading problems is broadly and strongly relevant to many curricular areas. The audio-visual coordinator should no longer merely order film strips and keep track of the tape recorders. In this setting, he would enter the classroom to confer on instructional presentations, and to suggest and demonstrate some of the possible additions of audio-visual procedures.

As we build and identify specific skills and as supervisors with links to the university become adept in these particular skills, there will be an organic need for instructional supervision. Administrators, outsiders, or colleagues might develop such uses of supervision in the schools. To move in the direction of instructional supervision, professional organizations, colleges and universities, and school district offices seem in the best position to influence such a change. Policy recommendations to this effect on a state-wide level should, in our view, be one of the productive concerns of such agencies as the State Committee on Public Education.

The more common forms of in-service training, such as courses, workshops, and visiting speakers, are often received by teachers as experiences the school district adds to their already heavy load. Frequently they are seen as something imposed from without rather than something growing out of the organic needs of the teacher, directly relevant to the improvement of their competence and transferable to teaching situations. Relevancy and convenience are primary factors to be considered in the development of future continuous education programs. In pursuit of this goal, we recommend three broad, inter-dependent proposals.

One, is the development of a wide variety of in-service "packages." These should be highly adaptable programs of instruction which can be adjusted to the local school staff's needs. These in-service programs should cover such areas as specific behavioral skills of teaching, new instructional systems and technologies, curricular innovations within a specific subject matter, the constructive potential of colleague supervision, and strategies dealing with special populations of students. These training programs might well be augmented by specially designed demonstration experiences, the use of films or tapes which highlight specific teaching skills and activities, and filmed lecture series that publicize new developments in content areas. At this time, these in-service "packages" could probably best be developed by both the universities and colleges, with the joint consultantship of leaders in the schools, and by industry itself. Industry's wide experience with in-service training of its own personnel should be particularly fruitful for in-service teacher education. Moreover, the recent and increasing involvement of such industrial concerns as IBM, Xerox, and RCA seems to indicate a forthcoming period of increased involvement of industry in education. For the schools, there is a real need to work with industry in order to avoid instructional defects in industrially prepared materials and maximize the coordinated aid which these materials will supply to the teacher. Industry's role must not be allowed to become one of developing "teacher-proof" instruction, but must be one of enhancing the positive relationships among teacher, knowledge, and learner. The potential mutual profits to both schools and industry suggest the pragmatic and broader educational values which should grow out of industry's development of these in-service training "packages." The financing of such university and industry sponsored in-service training programs would most likely come from the state and federal sources, from private foundations, and from industry itself. The impetus for concern and research in this area would seem an especially appropriate topic for further study and policy recommendations by the State Committee on Public Education.

Two, since much of the resistance to in-service training has come from the teachers for whom the programs are meant, it is of crucial importance that the teachers at the local level take a major responsibility for the implementation and initial choosing of these in-service programs. Local and professional organizations and area departments should be involved in the choice and adaptation of these programs. The advantages of involving the local teachers go far beyond the obvious psychological boost of including them in the decision-making process. More important is the fact that the local teachers are in the best position to make decisions on the programs and specific applications advocated by the program. Indeed, experience in the development of some initial programs should enable a long-term and potent influence to be exercised by faculty committees and professional organizations on the future directions of in-service teacher education.

Three, finding time in the schedule is typically a major problem within in-service training as it is currently conducted. Most frequently, in-service programs are scheduled after schools or on holidays. In this environment, in-service training comes to be regarded as an imposition rather than an aid. In-service training assumes a "tacked on" quality. New patterns for scheduling in-service training should be sought. Since the entire issue of in-service training is so critical to the full professional development of teachers, the most reasonable approach would be to make in-service training a part of the career description of teaching. In other words, time for in-service training should be allotted in the teacher work week. There might be one day a week when students would be released from school two hours early or given supervised independent study, and the staff would break up into groups for specialized in-service training programs. There is also strong merit in the example of assigning a lighter load to both beginning teachers and to the experienced teachers who have the responsibility for the professional training of these beginners. Indeed, these ideas have been demonstrated to be both possible and feasible. The benefits of the well-planned and relevant in-service program should stimulate the teachers in both method and content so as to reap a harvest of increased quality of instruction.

In thinking of the specific in-service "packages" which might be developed by either the universities and colleges or in industry, several topical areas present themselves. First, is the development of programs that deal with the specialized needs of rural schools. Specialized pre-service training of teaching candidates in the skills applicable to rural school settings is impracticable. For one thing, there is no known prediction factor to indicate which candidates will teach in rural areas. Also, the urban and suburban setting of most universities and colleges preclude close cooperation - especially in the area of student teaching and internship - between the colleges and the rural schools. Although pre-service training for rural needs is impracticable, in-service training is very possible and much needed. This, it would seem, should be one of the high priorities in developing in-service "packages."

Another specific possibility for an industrial or a university-produced in-service package involves the returning teacher. It was stated earlier that one of the unique characteristics of the teaching profession is the phenomenon of the large number of married women who leave teaching somewhere between the third and fifth year of their experience and return to teaching ten to fifteen years later, after the most demanding years of motherhood. In the intervening years, this teacher has been away from the classroom and, consequently, is quite likely to be unaware of changes in content, curriculum process, and even of changes in the characteristics of the student culture. With the possible addition of new and differentiated roles for teachers, and such far reaching innovations as flexible scheduling, the gradual re-assimilation of this teacher would be easier and more natural. Although the most extreme examples of content change are apparent in the areas such as science, we may expect that the future will bring sufficient change in all areas of the curriculum so that the ten to fifteen year absence from teaching will lead to a large degree of obsolescence in the teacher's content awareness. In considering any one of these changes in the interim of the teacher's absence from the classroom, the advantage of retraining requirements are obvious; in considering all the possible changes, this need is almost mandatory. The answer to this need does not lie in requiring a specific number of university credits to prepare a teacher for re-entry into the classroom, but does suggest the need for professionally designed programs which deal with the specific changes in knowledge in relation to the population of teachers who return after an absence of a number of years. The number of teachers in this category, and the time lag involved, make the need for this specialized in-service training a vital part of our concern for the future of California education. Moreover, the in-service approach to this re-training has strong advantages over the requirement of university courses, which are often isolated from the problems of the local classroom that the teacher is re-entering. It would seem that the most sensible and profitable approach to this retraining program should begin with the partnership of the schools with the state colleges and universities, in consultantship with the professional organizations and school districts. Summer institutes tailored to the specific needs come to mind for implementation of this need. At the present juncture, the involvement of university and college resources in the retraining of teachers who are re-entering the profession would seem necessary, although with advances in the school's experience with in-service education, and particularly with the utilization of differentiated levels of staff responsibility, it can be foreseen that the schools themselves might adequately handle this retraining program. The responsibility for setting the goals and establishing the guidelines for these programs would appear to be best placed with the professional organizations. If the profession is unresponsive to this need, due to the immediacy of the problem involved, it is only likely to assume that the Legislature in its concern for continual betterment of California education will bring legislative pressure or perhaps develop legislation itself to set goals and guidelines for such retraining programs.

It is apparent that in-service training programs are now far less than what they could and should be. It seems both logical and desirable that a closer partnership between the universities and the public schools should be established. One of the functions of the schools of education should be to act as liaison between the schools and industry for developing in-service training programs for use in the public schools. The forthcoming report on in-service education, being prepared by a commission under the chairmanship of Dr. Henry M. Gunn, should indicate some of the specific areas which need the immediate attention and interest of state agencies, universities, and industry, for the development of new in-service programs. Another conclusion which we expect the Gunn Commission report to support is that there is a need for better lines of communication among school districts and school administrators in the area of in-service training. It is too often the case that good ideas and projects in in-service training are not publicized and thus limited in their effect. There is clearly a need for some type of "clearing house," perhaps at the state level, which will make available to all school districts information on the kinds, costs, and success of in-service education programs.

INTERIM STEPS AND SUGGESTED ROLES FOR AGENCIES IN CALIFORNIA

The Role of the Legislature in Future Teacher Education

Experience in other professional fields has indicated that the legislature plays a valuable role in upgrading the standards of a profession when those standards are initially low. The California Legislature has done much to raise the standards and quality of educational personnel. However, at this juncture, it appears that further raising of minimal standards is not the answer. The teaching profession must now take on the responsibility of maintaining its own standards and policing itself. In assuming increased responsibility, the profession must shed its passive role. The atmosphere of responsibility should not be weakened by ever-increasing legislative controls. The Legislature should look at the whole school structure and propose specific goals in terms of performance as an alternative to minute prescriptions. Such a broadly based approach to policy would give the legislature more control over teacher education and its concerns, since it would place on the profession a higher level of responsibility, and thus demand a higher level of accountability measured in terms of results, rather than regulations.

The Legislature can provide incentives for investigation of alternatives to present patterns of training teachers in the skills of their profession. Through a close partnership with the profession, by which the Legislature would define goals of teacher education and support research for the attainment of those goals, the Legislature could play a productive role in the development and thorough evaluation of approaches to teacher training which would lead to the most effective teaching of the students in California's classrooms. On the basis of study and hearings taken in broad sectors of society, the Legislature should define the results it wants, and then turn to the profession and to the universities for approaches and solutions.

One specific need of rural schools which the Legislature should consider is the use of pay incentives to help rural schools compete for the talents of teachers. Since California has a relatively low percentage of "rural" schools, pay incentives seem particularly practical. A cost analysis study by the Legislature could establish this in specific terms. Even assuming that pay incentives might provide an average residency of only three to four years for a teacher, this would be a noticeable improvement over the current pattern. Moreover, it is conceivable that pay incentives could attract top teachers, and thus build strong educational programs that could provide greater professional satisfaction for teachers and serve as a major recruitment and retention aid.

In the area of teacher certification and credentialling, the Legislature can play a vital role in insuring the flexibility necessary to the development of a differentiated basis for determining job responsibilities and salary schedules. The Legislature's interest in pay differentiation, and in master teacher recognition, might well provide a framework for differing credential levels and entry points into the teaching profession, to encourage detailed proposals by school districts, professional organizations, and universities, to be monitored by the Board of Education.

The Federal Government's Role

The federal government's concern with education includes encouraging and supporting research in the education of teachers, and in helping the local and state agencies support the kinds of program they believe are making immediate gains in the improvement of in-service and pre-service teacher education. Education as an investment in human beings is a concept long familiar among economists, from Adam Smith to Alfred Marshall. And an indication of greater need to implement this philosophical commitment is evident in budget figures such as those from 1961-1963. These figures show that only 0.01 per cent of the twenty-five million dollar national expenditure on public education (five per cent of the Gross National Product) was spent in the area of educational research. A stronger federal commitment to research is needed, with the investment of large sums of money for the development of model teacher education curricula which cross state boundaries. The federal government might coordinate a system of reciprocity in credentialling among the states. In a similar line, the federal government should be encouraged to expand present research facilities, such as the Education Resources Information Center in Washington, D. C., and the Research and Development Centers at the nation's universities, especially those in California such as the one at Stanford. Further, there is a place for the federal government to play a coordinating and disseminating role for new programs in teacher education and curriculum studies. The question is no longer whether we should have a national curriculum, but what part of the curriculum should have a common national framework.

Universities and Colleges

The universities and colleges must develop new models of staff use and university organization for the university-wide responsibility for teacher education. Academic preparation must match the areas of responsibility which the teacher will confront in the classroom. And in this regard, it is clear that a good measure of justification lies behind a recent study of the California Association of Secondary School Administrators [18] which took to task the English departments in the universities for not giving attention to composition, reading, and the study of language in the English major proportionate to the attention that these areas are given in the public schools. Encouraging and supporting action by the Legislature and the State Board of Education toward those colleges which make significant gains in the direction of specific university responsibility for teacher education is clearly desirable.

The universities and colleges should be strongest in their commitment to research, and thus most attuned to the potential of new, as well as proven training programs. Encouraged by the Legislature, the federal government, and local school organizations, the universities should develop pilot programs which produce better methods for training teachers and encourage better use of in-service facilities. Conceivably, the universities can play a productive role in soliciting the aid of industry in the continuing education of teachers through in-service programs. At the same time, the universities can strengthen the university-school partnership by drawing heavily upon the schools' training potential in pre-service areas, such as supervisory positions of "clinical professors" and other school personnel with university standing and recognition. The universities should work hand-in-hand with the schools in developing realistic in-service education programs, better instructional use of supervision, and in testing staffing and scheduling patterns which suggest possible improvements for the quality of classroom instruction.

The School Board and the State Board of Education

As channels of communication to the university and colleges, local school boards can play a particularly useful role in advising these training institutions of the practical needs of the schools and in encouraging training programs which serve particularly well the local and state-wide needs reflected in the broad concerns of the school boards and the State Board of Education. In many cases, it would be hoped that the school boards can encourage their local districts to adopt, and to adapt to, better in-service training possibilities that grow out of the interest of the legislature, research in the universities and colleges, and consultation with industry. The State Board of Education, particularly, needs to play a more active role in defining the role schools should be playing in our society. Such a policy-defining role should reflect the concerns and contributions of broad sectors of our society. In order to adapt our schools to future needs, the State Board of Education should encourage experimentation, and give official recognition to the fact that we do not now have the final model for the best teacher education, staffing patterns, and curricular emphases. The school boards and the State Board of Education should assume the responsibility to interpret to the public the need for flexibility and experimentation, the need for the right to be wrong, in seeking to find the most humanly productive role for our schools in the future. The school boards could also serve as a link to the universities and to industry to ensure that in-service programs and models are directed to specific populations and kinds of student problems.

Administration in School Districts

School districts must accept increased responsibility for the training of teachers, for a more realistic teaching orientation, an active role in developing the potential of in-service education and, where appropriate, pre-service education. To do this, the school districts must work jointly with the universities.

As new patterns of staffing develop, the school district administration should play a key role in defining the specific levels of responsibility which can be logically used as the basis for differentiated salary scales. The solution to the problems toward which the concept of the differentiated staff is directed depends ultimately on the energetic efforts of the school administration and staff. Further, school districts need to work with the school staff and professional organizations to define specific in-service training needs. Such needs might include requirements of students who are culturally disadvantaged, concrete problems growing out of racial tension and minority groups dissatisfaction, the problems of students whose families move frequently enough to disrupt the continuity of those students' education, and the demand for specialized skills in helping students adapt to an increasingly more complex and technological environment. School districts need to play a leading role in exploring possibilities for expanded use of clerical and other non-professional personnel, such as employment of housewives who would welcome a chance to implement their college training in positions of limited responsibility, for whom the amount of compensation is of secondary importance.

Industry's Role

The increasing involvement in education of such major industries as IBM, RCA, Xerox, and Time Magazine points the way to a new and expanding aspect of industry's role in both research and local education. This expanding role reflects the increased possibility of financial profit and public relations gains for industry. Industry must be encouraged to develop systems in conjunction with teachers, to support and supplement teacher talent. Working on problems defined by the profession and the professional organizations, industry should play an active role in developing both instructional aids and in-service education programs for use in the local schools.

Professional Organizations

Professional organizations should help mobilize members of the profession to be responsible to and take part in the exploration and development of especially productive teaching methods and curricula. It should be a primary objective of the professional organizations to encourage teachers in the specification of responsibilities in the differentiated staff. Identifying levels of complexity in the particular responsibilities that can differentiate the professional role meriting a higher salary scale from another professional role is the necessary step to developing fully rational salary and job performance criteria for differentiation. The teachers themselves, with the leadership of the professional organizations, are most realistically situated and suited to make these judgments. Their involvement in these decisions is further an extremely desirable step to assure acceptance of and adaptation to differentiated staff and salary structures.

If the profession is to shed its passive role, currently somewhat encouraged by the frustrating difference between the "ought" and "can" of the undifferentiated staff, the professional organizations must seek to be active in the aspects of education which shape the role and responsibilities of the classroom teacher, and in touch with the agencies and proposals concerned with the continual improvement of education in California.

The Public and the Parent Teachers Association

The common interest held in the quality of the education of our children requires both an effort on the part of the schools to involve the P. T. A. in their changes, and the spirit of openness and cooperation on the part of the P. T. A. toward the frequently new methods introduced in order to improve the quality of teaching process, especially through the expansion of the in-service facilities and implementation of new staffing and scheduling structures.

If the school districts and professional organizations are to encourage teacher involvement in education, particularly in the areas of in-service training and implementation of more desirable and rational staffing and salary structures, then the local P. T. A.'s can clearly play an extremely valuable role in public relations between the schools and the communities. Concrete steps toward upgrading education in the schools demand responsive openness to some new concepts in teaching and in school organization on the part of the P. T. A. and the public at large. At the same time, the P. T. A. can keep the profession immediately aware of public response to local educational progress.

The State Committee on Public Education

It is hoped that the State Committee on Public Education can play a concrete role in encouraging flexibility in credentialling structures both in the Legislature and in the State Board of Education, in order to allow for responsible experimentation in testing proposals for teacher education. Further, it is our feeling that the State Committee on Public Education can provide the initial impetus for a concerted restudy of in-service education and the role of continuing education for various levels of public education and state agencies. The State Committee on Public Education can suggest new perspectives for teacher education in California. Teacher education is one part of a total view, involving the curriculum, school organization, the nature and scope of all institutions of learning, and the broader goals of society itself. The State Committee on Public Education is in an advantageous position to provide an integrating function in looking at all these components simultaneously. From this, the State Committee on Public Education should chart priorities so that essential projects and ideas don't fail for lack of personnel, recognition, support, and most important of all - coordination. At present education is like a jigsaw puzzle and the interdependence of its parts locks it into present patterns unless change is encouraged simultaneously on a broad front.

CONCLUSION

The common concern for the education of California's young people unites a large number of agencies, institutions and individuals in California. This concern should also alert us for the need for new alternatives, since the educational and instructional models we have used in the past are not necessarily the best for the future. The institutions concerned with education are so linked as to also make it difficult to change direction in education. But the strength of this link can hasten the spread of productive change once it is started. Perhaps teacher education can provide the beginnings of this productive change and quest for alternative models of teacher training and staff use to meet future needs.

California has unique problems in education and in teacher education, but the largest proportion of educational concerns is shared nationally and indeed internationally. California is a leader in American education, a role pressed by the sheer magnitude of members and fortunately the concomitant availability of resources. The children of California will be the first benefactors of the changes we can chart and translate into programs of action, but the legacy of such inquiries will be a human legacy for all.

While teacher education can do much to influence the quality of instruction in California's classrooms, it cannot rise above the caliber of people who make up the profession. For this reason, a central focus of this report has been on the need for staffing patterns of differentiated responsibility which will place the people of highest quality in the positions of most influence. Such differentiation is, in our eyes, a keystone in the effort to insure the quality of education tomorrow. The human values involved in that enterprise are far too important to society for any segment of institutionalized education to take pleasure in the indulgence of personal whims. We can look forward to decades of change. Technology will accelerate and hopefully, the process of education will keep pace. We have broad and essential choices to make about the role of the human and the support of technology in these decades of change. It is toward these choices that we feel teacher education and education at large must direct the attention of society.

ATTACHMENT I

MICRO-TEACHING:

A Description of the Stanford Summer Micro-Teaching Clinic of 1965

prepared by:

Jimmie C. Fortune
James M. Cooper
Dwight W. Allen

Stanford University
Stanford, California

THE STANFORD SUMMER MICRO-TEACHING CLINIC, 1965

Definition

Micro-teaching is a scaled-down teaching encounter which has been developed at Stanford University to serve two purposes, (1) as preliminary experience and practice in teaching and (2) as a research vehicle to explore training effects under controlled conditions. In micro-teaching the trainees are exposed to the variables in classroom teaching without being overwhelmed by the complexity of the situation. They are required to teach brief lessons (5 to 10 minutes) in their teaching subject, to a small group of pupils (up to 5). These brief lessons allow opportunity for intense supervision, video-tape recording for immediate feedback, and the collection and utilization of student feedback. The research to be reported in this article was done in the third micro-teaching summer clinic held as a pre-internship training program for the Stanford Secondary Teacher Education Program for 1965.

From demonstration teaching emerged the idea that interns might gain valuable experience if the students were actual learners and if the interns were attempting to control the content of their teaching specialty. Thus, the micro-teaching structure was put to an empirical test in an experimental clinic held in the summer, 1963. This clinic served as a vehicle of comparison between the micro-teaching and the teacher aide programs held concurrently that summer. The following summer, 1964, a second clinic was held and the data resulting from the two clinics were reported by Allen and Fortune in a previous article presented to AERA in February, 1965.

Findings of Previous Clinic Experimentation

The two principal sources of evaluation were pupils' and supervisors' judgments, recorded on the Micro-teaching Appraisal Guide, consisting of eight items, each on a five-point scale. The correlation of pupils' and supervisory ratings was .81 on the post-tests for the total group. Test, re-test reliability was .89 and split-half reliability was .84.

The findings during this period of experimentation were as follows:

1. Candidates trained through micro-teaching techniques over an eight-week period and spending less than ten hours a week in training performed at a higher level of teaching competence than a similar group of candidates receiving separate instruction and theory with an associated teacher aide experience--involving a time requirement of between 20 and 25 hours per week.

2. Performance in the micro-teaching situation predicted subsequent classroom performance.

3. Over an eight-week period, there is a significant increase in the accuracy of the candidate's self-perception of his teaching performance through identification of weaknesses as well as strengths.

4. Candidates receiving student appraisal of their effectiveness improved significantly more in their teaching performance than candidates not having access to such feedback.

5. Ratings of video transcriptions of teaching encounters are correlated with live rating of the same encounters.

6. Trainees' acceptance of the value of micro-teaching is high.

7. Students' ratings of teaching performance are more stable than any other--including those of supervisors.

8. Three skills subjected to experimental treatment in micro-teaching produced significant changes in the performance of intern teachers.

Planning and Objectives of Micro-teaching, Summer, 1965

Prior to the 1965 micro-teaching clinic a series of seminars was held to discuss, refine, and reformulate the structure and objectives of the program. The Stanford Teacher Education Program staff headed by Drs. Allen, Bush and McDonald developed the following conceptual framework of teaching skills for the summer clinic:

Technical Skills of Teaching

1. Initiating Behaviors:
    - (a) task direction
    - (b) set
    - (c) behavioral objectives
    - (d) diagnosis of learning
2. Presenting (communication)
    - (a) discussion
    - (b) lecture
    - (c) questioning techniques
    - (d) pacing
    - (e) frame of reference
    - (f) distinguishing between concepts and illustrations
3. Consolidation (of the lesson)
    - (a) redundancy
    - (b) reviewing
    - (c) closure
4. Monitoring
    - (a) control and participation
    - (b) attending behavior
    - (c) discipline
    - (d) rewards and punishments

5. Evaluation
    (a) combining grades
    (b) diagnosis

In addition to the micro-teaching experiences the interns were also enrolled in courses in educational psychology, curriculum and instruction, secondary education, and academic subject areas.

Time Table

In order to use the available staff efficiently and to provide pre-internship training for the class of 140 trainees majoring in eight different subject matter areas, a time table of micro-teaching experiences was formulated. This time table attempted to incorporate the technical skills of teaching described above into a pedagogically sound framework. This framework not only included a schedule of classroom training, but also opportunity for further experimental investigation and development of the micro-teaching concept.

1st Week:		Lecturing techniques and presenting skills
2nd Week:		Pre-instructional procedures
3rd Week:		Controlling techniques and procedures
4th Week:		Mid-term examinations break
5th Week:	Micro Class	Discussion skills
6th Week:		Consolidation skills
7th Week:		Evaluation skills

Included were two experimental designs. During the 2nd week an experiment investigating methods of training teachers in task direction skills was performed. During the 7th week a dual purpose experiment investigating explaining behaviors and performance reliability in respect to student appraisal of teaching was conducted.

The Micro-teaching clinic was held in eight classrooms located on Stanford's Inner Quad. Of these eight classrooms, four of them contained video-tape units. Each of the eight classrooms was standardly equipped with regard to blackboards, audio-visual equipment, and desks.

The Micro-teaching students were recruited from local high schools and were trained for a period of six hours in the use of the Stanford Teacher Competence Appraisal Guide. These students were paid for their participation during the summer. Teams of four students of the same grade level with mixed ability composition (grades 8-11) were assigned to each of the Micro-teaching rooms. They were rotated after each lesson so the reteach sequence would be taught to a different, but comparable team.

The Stanford supervisors were doctoral students selected for their teaching competence in their respective subject matter fields. Each Stanford supervisor was assigned a group of interns (4 to 9 interns each) in his area of teaching competency. This supervisor served a variety of functions. Among these were: (1) resource person, (2) advisor, (3) interpreter of student feedback, (4) rater, and (5) general morale booster.

These video-tape units are portable recording instruments which make possible a visual and audio tape of the teaching performance. These tapes are available for immediate replay by trained technicians and are used as stimulus objects during the supervisory conferences.

Description of Structure and Format

On the first day of the Micro-teaching clinic each of the 140 interns taught a five minute diagnostic lesson. The purpose of this first diagnostic lesson was to get an evaluation of the interns' beginning performance, and to expose the interns to the Stanford video-tape and supervisory system. The evaluation ratings of the interns' performance were made by both a Micro-teaching student team and a Stanford supervisor on the Stanford Teacher Competence Appraisal Guide.

After the diagnostic lesson was taught the interns were scheduled to micro-teach two teach-reteach cycles a week for three weeks. Prior to the first cycle each week the interns received one hour of instruction in a teaching skill to be emphasized during that week. Two five-minute lessons were scheduled to be taught in a teach-reteach cycle. Each cycle, although independent of video-recording, allowed for one teach-reteach cycle to be video-taped each week. This cycle consisted of: (1) a five-minute lesson taught to a new team of students and observed by a Stanford supervisor; (2) a five-minute supervisory conference; (3) another five-minute lesson taught to a new team of students and observed by the assigned supervisors; and (4) followed by another supervisory conference.

At the end of the first three weeks there was a one week break. During this 4th week the interns were given a week of rest from Micro-teaching and some instruction for classroom discipline techniques. Also during this 4th week the interns were organized into team teaching groups in their subject matter areas in preparation for micro-teaching during the 5th, 6th, and 7th weeks.

Concurrently the staff was engaged in ironing out administrative details for the coordination of the three remaining summer training programs: (1) the final micro-teaching for the 5th, 6th, and 7th weeks; (2) the Tutor program which consisted of each intern tutoring a local high school student for a three-week period; and (3) an observation program providing opportunities for the interns to visit local summer high school classrooms.

The 5th, 6th, and 7th weeks of Micro-teaching presented a different format than the first three weeks. During these last three weeks the interns were organized into team teaching groups. In each group there were between 2 to 5 interns. Each group prepared a twelve-day teaching unit under the direction of an assigned supervisor. The prepared unit was taught to the same student team for the entire twelve days. At the end of this period the students were evaluated by the interns. The teaching load was distributed equally among the interns in the form of 20-25 minute lessons with supervisory conferences of similar length following.

Description of Content

First Week. The skills emphasized during the first week were directed toward the acquisition of communication skills through lecturing. The instruction consisted of examples and techniques of lecturing including content organization and use of visual aids.

Second Week. This week's micro-teaching sessions were directed toward the proper initiation of filmstrips, homework assignments, discussion sessions, movies, reading assignments, etc. The instruction contained examples of initiating behavior and guidelines for orientation, set, and task direction.

Third Week. The concern of the third week was the skill of handling minor disciplinary disturbances with minimal classroom interference. A student role-playing program built around the identification of cues to inattention and possible disciplinary problems, and supplemented by descriptions of alternative teacher actions was used to achieve this goal.

Micro-class; 5th, 6th, and 7th Weeks. The purpose of the twelve day micro-class was to give the interns an opportunity to plan and teach a unit in their subject areas. They had the opportunity to teach their unit to one class of micro-teaching students for the entire twelve days. In this manner the interns were able to devise evaluative instruments to see how well the students had learned the materials presented to them. This also gave the interns the opportunity to teach longer lessons than they had in the first three weeks. The length of the lessons taught during these twelve day micro-classes was 20-25 minutes, with a 20 minute discussion of the lesson by the supervisor and the interns in that particular team teaching group. The format for these discussions were Appraisal Guide forms critiquing the lesson filled out by the micro-class students, the intern who taught the lesson, the other interns in the team teaching group, and the Stanford supervisor. Every other day of this twelve day period the 20 minute lesson was video-taped and used by the supervisor and interns for reviewing strong and weak points of the lesson.

Criterion Instrument

Throughout the six weeks of micro-teaching two types of criterion instruments were used. The Stanford Teacher Competence Appraisal Guide and individual reports of the skills emphasized each week were filled out by both the student teams and the supervisors. The individual reports appeared in the form of questionnaires asking for data related to the skill being demonstrated by the intern. The Stanford Teacher Competence Appraisal Guide consists of a thirteen item, seven-interval, forced-choice scale biased toward superior ratings to eliminate J-curve effects. This appraisal guide is now in the second year of usage and has been subjected to much statistical study. The guide as such is the evolution of some seven years of Stanford experimentation with and revision of teaching competence scales. The scale as such consists of thirteen semi-independent items constructed from the results of a factor analysis on a guide composed of twenty-four items. In several studies the guide has had adequate reliability over items and has been connected with student test performance in an analysis of covariance test.[19]

Analysis of Data

The statistical analysis of the summer micro-teaching data was made upon the thirteen items of the Stanford Teacher Competence Appraisal Guide. These thirteen items are:

1. Clarity of Aims
2. Appropriateness of Aims
3. Organization of the Lesson

4. Selection of Content
5. Selection of Materials
6. Beginning the Lesson
7. Clarity of Presentation
8. Pacing of the Lesson
9. Pupil Participation and Attention
10. Ending the Lesson
11. Teacher-Pupil Rapport
12. Variety of Evaluative Procedures
13. Use of Evaluation to Improve Teaching

The scores for these items were obtained from micro-teaching student ratings and Stanford supervisor ratings. The statistical analysis included both an overall analysis of the 1st diagnostic and the final diagnostic, and a sequential analysis evaluating weekly results. With the exception of the two experimental designs included during the 2nd and 7th weeks of the clinic, pretest-post-test analysis of variance and one-way analysis of covariance with the first diagnostic ratings as the covariant provided the statistical instruments of analysis.

Conclusions

The Micro-teaching clinic produced significant behavior changes in teacher education candidates, an objective measure of valuable experience over the period of pre-internship. A questionnaire designed to evaluate student acceptance of micro-teaching indicates that less than 15% of the interns reported that the experience was of little or no value. In every week (except the Saturday experimental sessions) micro-teaching was felt to be either very or extremely valuable by more than 60% of the interns returning the questionnaires.

From the analysis of the 1965 summer micro-teaching clinic data the following general conclusions can be drawn:

1. Nine of the first twelve appraisal guide items showed significant (p .01) mean gain over the course of the six week clinic. This mean gain is indicative of substantial intern improvement in the items showing change.

2. Throughout the clinic the major teaching strategy involved the uses of student and supervisory feedback to achieve intern teaching change. This strategy again proved successful since 70% interns reported the usefulness of supervisory feedback and 24% reported the usefulness of student feedback.

3. The 1965 micro-teaching data and results tend to replicate earlier findings in the 1963 and 1964 clinics previously reported to AERA, February, 1965. These results affirmed the effectiveness of those teaching skills reported in 1965 which were previously identified and studied in the earlier clinics.

4. Training in the use of the Stanford Teacher Competence Appraisal Guide seems to help stabilize the ratings as is seen in the similarity of ratings made by different groups of students on the teach-reteach cycles of the first three weeks.

ATTACHMENT II

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FOOTNOTES

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APPENDIX K

PHASE II:
CURRICULUM INNOVATIONS FOR THE STATE'S QUALITY GROWTH AS WE APPROACH 2000 A. D.

CONSULTANTS' REPORT PREPARED
FOR THE
STATE COMMITTEE ON PUBLIC EDUCATION

Prepared by:

Paul R. Hanna

School of Education, Stanford University

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APPENDIX K

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APPENDIX K

PHASE II: CURRICULUM INNOVATIONS FOR THE STATE'S QUALITY GROWTH AS WE APPROACH 2000 A. D.

The Rationale of Our Approach to Curriculum Innovations

We believe that education serves two major purposes: (1) the development of the individual and (2) the development of the society.

Each of these purposes is complementary to the other: each can be thought of as one side of a single coin, or each might be considered as one leg of a bipedal organism that moves forward in dynamic balance.

For a half century schools have been primarily preoccupied with improving the curriculum for the first purpose--providing the opportunity for the development of each individual to the fullest measure of his capabilities. This over-riding concern with education as an item of consumption--to be pursued or neglected by the individual as each learner chooses--has brought marked changes in schooling, some decidedly advantageous to the motivated individual but others of limited or of questionable value to the larger society which creates and maintains the school system.

More recently economists have been studying education as a form of investment which the society makes in order (1) to assure the perpetuation of basic survival values, concepts, and skills and (2) to facilitate the shaping of the more desirable conditions among the alternatives we face as we look toward the 21st century. In this second sense of education as investment, there is increasing agreement that modern man--using scientific principles and tools and employing his ever-increasing intelligence--can make choices among the diverse directions which future events may take. Modern man is gaining the capacity to invest deliberately in education as an instrument to bring these desirable future conditions into being.

Education, as never before in history, is vested with great responsibilities and hopes for bringing about a better world. In this forward thrust it is crucial that those values and institutions which have served us well be included in the frame of reference for choosing among alternative paths toward our future. But, central to these responsibilities and hopes is an obligation to give as much attention in the curriculum to conjecture about the future as we give to study of our historical roots which help us understand who, where, and why we are today.

It is our understanding that the staff of Project V on The Curriculum should examine carefully, and with imagination, innovations in the California precollegiate school curriculum that are relevant to this problem of investment in education to assure a better tomorrow. Not for a moment can we afford to neglect the other and complementary purpose of education as developing the individual; but this report consciously stresses the need for a balance and suggests how balance in curriculum can be established by focusing on those recommendations that are generated by the concept of education as investment in California's future.

What Might Be the Shape of Things in California at the Turn of the 21st Century?

California is already the most populous state in the Union, with great resources in land, minerals, forests, climate, ocean, advanced technology, and in people skilled in the arts and sciences of modernity.

But what of the future? Our future-oriented leaders employ various techniques of projecting trend lines in demography, land use, occupational distribution, amounts and uses of leisure time, resource reserves, educational demands, transportation and communication, health, crime, per capita gross production, and a host of similar human endeavors and concerns. These projections as predictions present exciting promise; but they also highlight problems and threats of great seriousness.

If current demographic predictions of 50 million people--2 1/2 times the present population in the state--should materialize by the year 2000, what would this do to the land use pattern? To the congestion of people in cities? To our water supply? To waste disposals? To depletion of our soils, minerals, forests, game and wildlife, etc. ? To the increase of incidence of crime? To competition by developers for wilderness areas and green belts. To the difficulties of rapid movement of people and goods over distances?

We must here pause to state what any intelligent person already knows concerning the lack of certainty in long- and even short-range predictions. The avenues of recent history are strewn with the discarded paper forecasts of planners who tried to discern the future and failed. Good examples of such "target misses" are cited in the "Washington Outlook" of the August 20, 1966 issue of Business Week.

But modern men have no choice except to make as careful forecasts as are possible within this young art of planning. To do less would be folly leading us to certain disaster. With full knowledge that our forecasting mechanisms must be eternally vigilant to sense those unexpected forces and events that enter into and change our current predictions, we now turn to look at the future of the California scene within the larger backdrop of region, nation, and world communities.

The public is being awakened to the polarity of the future--to the promise and to the threat--to the agony and the ecstasy. The public and the private sectors of our state are studying these problems of the shape of things to come and then forecasting. Our purpose in citing these efforts following, to repeat, is to discover possible content that might become new input into our curriculum as investment in California's future.

The private sector has for years been planning for expansion of communication, electrical power, transport, recreation, health, housing, jobs, and the full range of human activities that make up the good life in California. No corporation or no financial institution could survive today's competition without engaging in "rolling planning" for expansion over the short and the long run.

Attachment I contains a very incomplete sampling of the type of study and planning enterprises carried forward by the responsible corporations and non-governmental groups who operate the free enterprise economy and social activities of our state. No apology is made for the shortness of the sample in Attachment I; we are merely illustrating the existence of powerful forces within the private sector that are studying and forecasting the future in a manner that consistently feeds back corrective new findings into the long- and short-range plans for development. The California State Chamber of Commerce, California Labor Federation (AFL-CIO), California Association of Health and Welfare, California Association of Port Authorities, California Bankers Association, California Manufacturers Association, California Medical Association, California Newspaper Publishers Association, California Physicians Service-Blue Shield Plan, California Redwood Association, California State Automobile Association, California Taxpayers Association, and California Teachers Association are just a few state-wide, non-governmental organizations that engage in forecasting and have made available studies of specialized components of California's future that together reflect the larger picture. One could list hundreds of corporations and financial institutions that likewise engage in planning in their respective sectors.

Likewise the public sector is vigorously gathering demographic data at local, intermediate, state, and national community levels in order to make estimates of the size of the population by decades, by age groups, by location, by occupation, etc. The California State Department of Finance, through its subsidiary State Office of Planning, is engaged in a massive exercise that is basic to the sound development of nearly every aspect of the growth of this state from now until the year 2000 and often beyond. These data gatherers and the forecasters and planners who work with those data are providing us with alternative predictions of what we Californians may face in the decades to come.

An examination of the range and depth of study and forecasting by the public sector of the State of California gives clear evidence of efforts toward better control over our future through the application of intelligence. In Attachment II one can find a brief introduction to the studies done by contractors for the California State Office of Planning and a list of some of these investigations of far-reaching importance.

As we said above, no one is foolish enough to believe that we can predict the future with certainty, or that by deciding not to plan, the best of the possible worlds will automatically come to pass. But we can with confidence say that, knowing something of the promising and threatening alternatives, we can make choices of the more desirable conditions we hope to live under in the future and then we can deliberately set in motion those factors that seemingly will have the greatest impact on creating the conditions we seek. Man is increasingly the master of his fate.

Illustrations of Curriculum Innovations

We turn briefly to consider two illustrations of current innovations in precollegiate school curriculum. Many school districts in metropolitan communities are experimenting with course of study guides and pupil materials that deal with this emerging community of men which we speak of as Megalopolis.

We are keenly aware of the increasing frustration of living in our several metropolitan communities in California; disposal of waste into water and air; traffic congestion; core city blight and increasing protest and open violence by those who resent the substandard physical and social conditions; lack of open space for refreshment and recreation; etc. What are the possible consequences of allowing "nature" to take its course? What are the alternate solutions? What contributions may have to be made by all parties--the suburbs and the core city--if any solution is to be found? What can be introduced into the elementary and secondary curriculum throughout California that will give youth the rational basis for participating through legally constituted channels in the solution of the metropolitan problems? How can such concepts, values, and competencies be fitted into the various programs of the elementary and the high school?

What are the measures and mechanisms that may be recommended for the continuous review and modification of such material on Megalopolis in the curriculum? How shall the effectiveness of the curriculum be measured, both in the short run and over the long run, in the tangible improvement of metropolitan problems? How shall teachers be equipped to lead children and youth in the continuous study of and endeavors to improve the metropolitan community?

The questions posed above regarding the metropolitan community can be raised with almost equal concern about each of the several expanding communities of men in which each one of us simultaneously holds membership and participates. The curriculum, more often than not, fails to come to grips with reality and fails to face up to the alternative solutions among which we, and our children in their time, will have to make choices.

Secondly, we present a very different type of curriculum innovation that results from a united effort of a segment of the humanistic community of scholars--the linguists--and of the professional educationists: fundamental changes in the spelling curriculum. Spelling has long been considered a simple rote memory and drill subject in the daily program. For 50 years spelling has been taught on the assumption that the orthography of American-English was so irregular that no rules would help the pupil master the encoding of our oral-aural speech. As a consequence, curriculum makers selected about 3, 000 most frequently used words and these were presented as 3, 000 independent learning acts. For a generation the linguists have been pointing out to school people that our language is alphabetical in its written form. Each sound (phoneme) in a word has a letter (grapheme) to represent that sound. The old Hawaiian language represents an almost perfect alphabetical language: there were only 13 sounds and only 13 letters--a perfect sound-to-letter matching. To learn to write (spell) one had only to be able to recognize the phonemes, know their grapheme representations, and he could spell any word he could hear or pronounce. This alphabetical principle is a far more advanced system of writing than the traditional Chinese where a different character or picture had to be made for every different word in the lexicon.

American-English is not as consistent nor as simple as Hawaiian, however. Superficial analyses of American-English orthography misled educators into thinking there were few dependable rules for spelling. Yet, massive research, following linguistic principles, and using modern data processing, has been completed recently that proves that the spelling of our language is surprisingly regular, consistent, and predictable when one goes deeply enough into its structure. Roughly 90% of the correct "standard" letters can be selected on the basis of direct correspondence of sound to letter, or simple rules flowing from the fact of position of the sound in a syllable, or by noting the sounds that surround the one under analysis; or by knowing morphological principles of compounding and affixation. In short, there *is* a system to our spelling and that system *can be learned*, thus eliminating the necessity of mastering every word in the vocabulary as a separate act of memory. Now that research findings are available and new curriculum materials are under experimentation, no pupil should be denied the opportunity to build the power to spell almost any word in his spoken vocabulary. And yet, in most classrooms in this state, practice relies on visual memorization of the graphemes, without benefit of advanced programs that develop the power to spell, knowledge which is rooted in modern linguistics. This spelling example leaves little doubt that curriculum development mechanisms need to be created that would lessen the lag that too often persists in getting the current innovations, proven to be sound, into practice in the classroom. Both text and teacher need attention in rapidly updating the curriculum.

How Can the Curriculum of California's Public Schools Facilitate the Emergence of the More Desirable California of the Year 2000?

We come now to the heart of the assignment--the curriculum innovations that could have an impact on the shape of things to come in California. This curriculum development task involves as a minimum these components:

1. Establishing an efficient and effective communications channel through which the studies, projections, and rolling plans prepared by the community of academic

scholars and by the public and the private sectors of California become significant input into the school curriculum development apparatus.

2. Translating the studies, projections, and dynamic plans for California's future into appropriate educational objectives.

3. Developing appropriate curriculum and instructional guides and pupil materials that will prepare today's youth--tomorrow's citizens--to cope successfully with the problems of accelerating changes.

4. Planning for preparation of teachers--both preservice and inservice--capable of providing the appropriate teaching-learning experiences demanded by the above paragraphs.

5. Inventorying the current legal curriculum requirements that permit and/or limit in the present school program the accomplishment of the tasks listed above.

6. Inventorying current classroom and local district curriculum practices that may show either conformity with or deviation from the legal code.

7. Matching the curriculum of three above with the inventories of five and six above to determine what, if any, changes might be made in the legal requirements and what innovations in curriculum might be considered at state, intermediate, local, and classroom levels in order to bring traditional curriculum plans and practices into closer harmony with the more future-oriented curriculum which is designed to serve the developing society.

8. Suggesting the mechanisms by which those responsible for curriculum in this state might continuously facilitate curriculum renewal to reflect the growing skill of the planners to discern the shape of things to come.

Some of our readers by this time are surely asking for a fuller discussion of the range of philosophic curriculum positions which are held by educators and thinking citizens. Such a backdrop of curriculum theory may help the reader understand better the approach we are taking in this paper--an approach that may challenge some of our traditional theory and practice in California precollegiate curriculum.

Theoretical Positions Held Concerning the Curriculum

It is the purpose of this section to identify and describe some of the major competing positions that have been advanced regarding the goals of education and the organization of the curriculum. A second purpose is to suggest a mode of educational planning through which the State of California might intelligently guide the course of education within its domain.

To the reader who wants answers--fast and direct--to educational problems, the prospects of reading about competing value positions in education and resulting alternative modes of curriculum organization might seem laborious and dull. The fact of the matter is that educational questions are seldom resolved by simple answers; answers to problems involving the intellectual, social, and economic future of California youth deserve and require more than short-term study. What this section can do is to lay out different educational directions and to suggest some of the ways that seem to us promising for their realization. With such a backdrop, educational planning might proceed with greater enlightenment.

We start with the premise that education is a normative or value directed enterprise. That is, education is intended and designed not simply to change pupil behavior but to improve it in those directions considered desirable by the society maintaining the school. The schools exist, therefore, as social institutions created by society to improve the lives of the people and the conditions of the communities they serve. While this idea might seem like a homily, it is precisely at this point that educational conflicts arise. For what the proper goals of education are to be is itself an issue of contention. Who shall be educated and for what ends are questions that lie close to the heart of political, moral, and educational values. And these questions, because they rest upon problems of value, cannot be answered simply by appealing to the facts of science. At rock bottom these questions are matters of conviction and persuasion. It is upon these issues that educational debate has occurred. Ever since man reflected upon his efforts to shape the course of another person's or a community's growth, positions of support and dissent concerning educational goals have been advanced. Thus, the goals of education, when stated clearly enough to be meaningful, have been the source of controversy--a healthy sign, for who in matters so important would prefer apathy or unanimity?

As one reviews the course of education and the goals which have provided the direction for the curriculum, it is possible to identify three foci that have been prominent. These foci are the subject matter to be taught, the child to be educated, and the society to be served.

The first of these--the subject matter emphasis--begins with the premise that the means and ends of education are to be found in the subject matters that are to be offered children when they come to school, and two varieties of the position have been developed over the past sixty years. The first rests upon the idea that certain subject matters such as Latin, Greek, Mathematics, and Grammar function as a type of "intellectual vitamin." If the child's mental faculties are to grow and be strengthened he needs "food" that is appropriate. The most appropriate food that man can offer the growing child is the strengthening, if unsavory, diet of solid subject matters. These subject matters, partly because they are difficult to learn, are considered to have the capacity to exercise and hence strengthen whatever mental equipment the child has the good fortune to inherit.

The mind, in this view, consists of a variety of intellectual muscles that are strengthened with use or will atrophy if allowed to remain inactive. And the difficult solids--selected in part from the ancient Roman trivium and quadrivium--exercise, in the minds of those who hold this view, the major and useful facilities.

What we see in this view of proper curriculum content is an emphasis upon the classical subject matters. These subject matters are valued for their power to inculcate certain dispositions toward authority and learning as well as to train the mental faculties through disciplined study. Respect for authority, perseverance and obedience are seen as concomitant outcomes of an educational program that make such demands upon children. Indeed, this view of appropriate curriculum content, like all the views that will be described, exists in a value context far more pervasive than any single subject matter to which it may be directed.

A second version of this view is far more receptive to the liberal mind than the view just advanced. Rational humanism, a view of man, society, and knowledgede advanced most persuasively by Robert Maynard Hutchins and Mortimer Adler as well as by some members of the Council for Basic Education provides a second orientation.

With this view the child goes to school to be educated. And to become educated one needs to have an opportunity to realize the potentialities that each individual possesses. But although it is admitted that each human being has certain traits that are unique, man is seen as more alike than different from his fellow. Those qualities which make men man are the qualities which must be cultivated. But how?

For rational humanists and for others who are sympathetic to this general position the cultivation of intellect and the development of rationality are dependent upon having the student examine only certain subject matters through certain methods. Since not all subject matters are created equal and since the school has but a limited time in which to serve the child, only the very best subject matters should be taught. What are these?

For Robert M. Hutchins, an advocate of this view, the laboratory sciences play an important role, but history, literature, and the arts are even more important. These subject matters deal with questions of value and have the capacity to lead the student not merely to knowledge--something which is, of course, important--but to wisdom. And wisdom for Hutchins goes beyond knowledge; wisdom liberates the student and enables him to reflect upon the perennial and most significant questions of human existence.

Hutchins writes:

> When I urge liberal education for all, I am not suggesting that all the people must become great philosophers, historians, scientists, or artists. I am saying that they should know how to read, write, and figure and that they should understand the great philosophers, historians, scientists, and artists. This does not seem to me an unattainable goal. If it is, unless some better kind of liberal education can be invented than the one that I have described, we shall be forced to abandon universal suffrage; for I do not believe that men can solve the problems raised by their own aggregation unless they can learn to think for themselves about the fundamental issues of human life and organized society.

Here we see a position, stated succinctly, that has persuaded people throughout the years.

The rational humanist position holds further that not only do certain subject matters deal with critical issues to which every man must attend, but also that unless all men during their schooling learn to speak a common language through the study of common subject matters, the future of society is in jeopardy.

All men have more in common than not, hence the rational humanist would conclude that education both in means and in ends ought to be basically similar. Without a common education communication breaks down and society splinters. Without an education aimed at the cultivation of rationality some men become less than human. And since the school has limited time, it should not attempt to meet the evanescent needs of a state or locality. Education for the present is a mistake and education for an unknown and unknowable future foolish. Man should be educated to understand the greatest ideas produced by the greatest men who ever lived. And where are these ideas to be found? In the great books. Those teachers who choose to do less, half educate.

The practical consequences of this view are not insignificant. If it were applied to California schools, courses in driver education, programs in home economics, training in physical education would be abandoned. These courses of study, although important, are not unique responsibilities of the school. And one of the first things that the competent school teacher needs to learn is that he cannot, and should not, attempt to do everything that is good for man within the confines of the school. The wise schoolmaster is known by the subject matters he refuses to teach.

Not only would a wide and large selection of courses now offered in precollegiate schools be abandoned but the method of instruction would also be changed.

Since what the schools are after, according to the rational humanists, is the cultivation of man's rationality, it is important to use methods of inquiry which are likely to achieve so noble an end.

The most powerful instructional method for achieving such an end is through the use of dialectic. The dialectic method, developed most clearly in the Socratic dialogue, requires relatively small groups of students discussing with the aid of a teacher the important issues, premises, and problems embedded within the subject matter of their inquiry. In this process the teacher raises questions that are designed to lead the student from one level of understanding to one higher. The student, by virtue of the questions the teacher asks, is enabled ultimately to perceive the natural relationships existing among apparently diverse subject matters. What appear at first as independent domains finally become unified. Indeed, from the point of view of dialectic procedure the educated man is characterized by his ability to perceive life as a whole, made up of parts sharing some common quality or idea.

Rational humanism as a philosophic view prescribes therefore both curriculum content and instruction method. It requires teachers who are grounded in the art of dialectic inquiry and this assumes mastery of the intellectual disciplines that constitute curriculum content. In certain private schools and colleges this content and method are operable. The extent to which such a prescriptive view is practically applicable in the public schools has yet to be determined.

A second view of curriculum that has been prominent in educational theory and which is being practiced increasingly in modified form today was first advanced by proponents of the scientific movement in education.

Around the turn of the century when the methods of science were first used to cope with educational problems, one area that was brought under systematic study was that of the curriculum. Through pressures placed upon the schools by the press and the public, schoolmen attempted to demonstrate the effectiveness of the school by gathering data intended to reassure a concerned populace that the schools were effective. Schooling was considered analogous to business. And a business as everyone knew could not long endure unless its product was marketable. During the turn of the century, as one writer put it, "the cult of efficiency" entered the educational scene.

In this view, the school is seen as an institution designed to prepare citizens to take their proper place in society. No abstract goals such as the development of rationality or the strengthening of the faculties are subscribed to. The school has practical aims.

But where are such aims to be found? Not in the subject matters, argue advocates of the society-centered view, but in the demands of the social order. The trouble with the subject-centered approach to curriculum development is that it does not provide a useful education. The words that are read, even when studied dialectically do not meet the daily demands of a practical world. The content of the curriculum is not to be found in the great books but in the daily tasks that men need to perform in order to meet the demands of citizenship.

The approach taken by Franklin Bobbitt, one of the earliest advocates of this view, is instructive because in its simplicity it exemplifies the more modified approaches of the present. According to Bobbitt life in contemporary society (1918-1926) can be divided into ten domains in which life's duties are performed. Within each domain Bobbitt identified an excellent practitioner. For example, in the domain of personal hygiene there are people in the community who are models worthy of emulation. Bobbitt's approach is to study these model individuals in order to identify the types of skills and procedures they are able to perform in this domain. Once these skills are identified the task of the curriculum builder is to order them into levels of difficulty and to assign them to the several grades. Bobbitt writes:

> The central theory is simple. Human life, however varied, consists in its performance of specific activities. Education that prepares for life is one that prepares definitely and adequately for these specific activities. However numerous and diverse they may be for any social class, they can be discovered. This requires that one go out into the world of affairs and discover the particulars of which these affairs consist. These will show the abilities, attitudes, habits, appreciations, and forms of knowledge that men need. These will be the objectives of the curriculum. They will be numerous, definite, and particularized. The curriculum will then be that series of experiences which children and youth must have by way of attaining these objectives.

What Bobbitt arrived at eventually was a system for curriculum building which studied the present in order to prepare for the future. But what is more, he constructed a curriculum in which each domain contained scores of specific educational objectives which ranged from, "Ability to use language in all ways required for proper and effective participation in community life" to, "Ability to entertain one's friends." Here we see on Bobbitt's part an effort designed to make education meaningful by relating it to life's demands. But at the same time we could agree with Hutchins that such goals as are exemplified by "entertaining of one's friends" has no proper place in the curriculum of the schools.

The reader should not smile and relegate this approach to curriculum construction to the relics of a bygone era. Vocational training programs, technical schools, consumer education courses, and driver training are justified by appealing to the same premises with which Bobbitt worked. While it might be true that educational objectives are not defined as specifically as Bobbitt might have wished, the assumption that the curriculum of the schools should be related to the needs of citizenship and of earning a living are very much with us today. If there is a body of skills, knowledge, and attitudes that citizens need, then does it not make sense to develop them in the schools when other social agencies are unable or unwilling to do so? Is it not reasonable to offer different curriculum programs to different types of students? Should not vocational training be an important part of curriculum in the junior and senior high school?

The resounding answer from rational humanists is "no." If we know anything about society it is that it is changing at an unparalleled pace. To prepare for the future by studying the present is at best foolish and at worst disabling. What we need, they argue, are people who can think clearly and to think clearly requires content which makes appropriate demands upon the students' rationality. In addition, sorting students into educational programs according to the characteristics or desires of the student is, in empirical terms, to sort by social class; it is, in effect, to create not two, but several cultures incapable of establishing communion. The rational humanists reject the broad social orientation developed by Bobbitt and others working with a society-centered frame of reference. Here we see by sharp contrast the differences that only two competing views make in the content and method of education. But the problem would be simple if there were only two competing views. Alas, there are more.

A third highly significant view of curriculum and instruction was advanced by those who embraced experimentalism as a philosophic base for educational decision-making. This base, developed before the turn of the century by pragmatists such as James and Pierce, was elaborated most fully by Dewey. And this view, like the others already described, is not "mere" history. It is, like the others, still with us. This view places primary emphasis neither upon the subject matter to be taught nor the society to be served, but upon the child and the cultivation of his idiosyncracies.

What we see in this view is a conception of education geared to the emerging interests and capacities of a unique human being living through a unique environment. The subject matter orientation according to the child-centered theorists does not adequately regard the nature of the child's development in viewing the curriculum. It views subject matters from an absolute rather than a contextual point of view. While, for example, algebra and European history might be appropriate for some children, these subject matters are not necessarily appropriate for all children. Thus, the significance of a subject matter cannot be determined apart from the child and context in which it is to be used. The difficulty with the subject-centered approach is that it too often becomes meaningless verbal learning--intellectual minuets which are unconnected to the child's life in any personally meaningful way.

The society-centered approach sacrifices the unique capacities of the child to social adaptation, thus limiting the contributions to society that the individual is capable of making. The child cannot be prepared for a distant future except by helping him cope with problems that concern him in the present. In this view the teacher is to be a student of child development and is to take his lead from the child in building curriculum. This approach would make educational capital out of the very real concerns that the child and adolescent bring to school. Ernest O. Melby provides some of the flavor of this view toward curriculum in the following:

> Were we to organize the school with primary regard for the welfare of children, we would probably make sure that nowhere in that school do we have a book or pamphlet or set of instructions which prescribes the subject-matter to be taught to any group of children without regard to their needs, interests, or abilities. If such a plan were followed, courses of study as we have known in the past would be completely removed from all school systems . . . we would equip the teacher for a constant study of each child for the work of developing an essentially individual curriculum for each child . . . . In short, we would so arrange the materials and set the stage of learning activities that the teacher would be literally and sharply confronted with the problem of developing a curriculum for each child.

One can sense in Melby's words a very personalistic orientation toward education, an orientation that a great many elementary school teachers share. In this conception of education the teacher plays not the role of an "engineer" attempting to meet product specifications provided in advance by a consumer, nor is he to be a sculptor molding some malleable matter. The appropriate metaphor is horticultural in character. The teacher is as the good gardener who carefully nurtures his growing plants. And with a nurturing environment the potentialities of the plant come to fruition.

The heart of the instructional method in this view has two characteristics. First, it is problem-centered. The student is enabled not merely to work in a program built around his interests but is helped to frame problems within those interests that are capable of being resolved. Second, the problems the student investigates are project-oriented. That is, the problem, especially in the elementary grades, is multifaceted and requires the use of a variety of data from different intellectual spheres for its resolution. For example, the student would not study sociology but would study the growth of the city. In such a study sociological data and procedures would play an important role, but the student would also employ economic principles in some degree, he would employ historical method and he might even deal with communications theory and psychology in rudimentary forms. In short, because the problems that come to men do not emerge in logic-tight disciplines, the student would learn to cope with problems by interrelating a variety of tools from several domains of inquiry. The formation of concepts and methods in relation to a problem are the terminals of inquiry in a discipline, not its starting point.

In this view of appropriate curriculum content just described we see a child-centered, project-oriented, problem method approach to education. The educative process, in so far as possible, is individualized. The teacher is viewed as a key person, someone skilled in the understanding of the child and in making intellectual hay out of the shifting needs and interests of children. In this view, every child is a custom job.

The most recent view of curriculum, at least the one that is at present most prominent on the educational scene, has had an interesting birth and has moved in an unexpected direction.

It is a familiar story how during the late forties and early fifties critics of American education became quite vocal about the foibles of the system. Educational Wastelands, Retreat from Learning, and Quackery in the Public Schools were all published within this period. The schools according to these critics were soft; the curriculum placed too much emphasis on frills and too little on solid subjects. Permissiveness was rampant and a pernicious life-adjustment philosophy had come to dominate even the more sober-minded teachers. With the rise of Sputnik I on October 4, 1957, the press joined the critics to belabor the weaknesses of the American educational system. Articles in Life comparing Ivan and Steven underscored the softness of the American school--by Russian standards. "Let's Close Our Carnivals" was given full treatment in Look. The critics of the school had the straw to break the camel's back and in the name of American society the schools' curriculum, especially at the secondary school level, was to be revamped. And where were the changes made? In view of the space race, in the sciences and in mathematics, of course. The National Science Foundation underwrote a major portion of the cost of the new curriculum study groups which were formed. And in the course of several years new curriculum content, developed out of crises, unrelated to the whole of which it was to be a part, manufactured from the top down, was created. During the late fifties a manpower concept of education--a variety of the society-centered theme--came to dominate thinking about educational goals and educational method.

But much has happened since the first flush of change. The programs which were initiated as a part of a "get tough" policy in which solid school subjects were to be injected into the curriculum have moved gradually toward a process-centered approach to learning within the disciplines. Paradoxically, however, some of the very issues and procedures that were advanced by the progressives and criticized by their adversaries have reappeared in the programs that were designed, in part, to replace "soft pedagogy." For example, the encouragement of student initiative, the development of problem-solving skills, the nurture of creative thinking, all endorsed by the progressive child-centered educators of the 1930s, are also endorsed and nurtured by those who supported the new curriculum. But unlike the old progressives the newer approach to curriculum emphasizes the integrity of the discipline and employs methods and materials which are intended (1) to help children understand its structure and (2) to learn a subject matter by "making it" through laboratory inquiry-oriented procedures.

These new developments if analyzed psychologically and philosophically reveal two features which provide a rationale for their place in education. From a psychological frame of reference the disciplines can be viewed as "cognitive maps" which, when understood by the child, make it possible for him to interpret meaningfully whatever terrain those maps illuminate. And since there are different disciplines, hence different maps, it becomes important for the child to learn to use several so that his view of reality is both complex and subtle. In short, meaning in life in this view is contructed through the concepts and methods that characterize the several major disciplines.

The second feature of interest in this approach to curriculum construction enters through the back door. It deals with epistomology--the nature of truth. Because the new curriculum emphasizes the structure of the disciplines and the methods of inquiry appropriate to them, it inevitably deals with the question of propositional adequacy. And this question at base deals with the criteria through which knowledge claims are validated. Thus, children doing science learn not only the important constructs and theories of science, but the criteria for testing the truth, falsity, indeed the meaningfulness of an assertion. Thus, another paradox. What was born as an attempt to upgrade the solid sciences is slowly beginning to give way to the soft humanities.

For questions of truth, falsity, and meaning are philosophic questions. And as students attend them with greater concern they move from the doing of science to the study of the nature of science and the ways of knowing--issues that are central to humanistic study.

It becomes clear that each of the theoretical positions that have been described has a proper educational concern. It is also clear that all three foci--the child, the subject matter, and the society--must be considered in building a suitable and realistic educational program. While it is obviously not possible to predict with certainty the details of tomorrow's world, some characteristics, both positive and negative, are fairly visible. Demographic changes in the state, problems dealing with the pollution of natural resources and the overriding demand for world peace are only a few. It is our position that the developments that will emerge in the future need not be considered predestined or inevitable. Education, as it is institutionalized in the schools, can help men to construct the kind of world in which they choose to live.

To bring such an educational program about requires attention to the child's cognitive and emotional development as well as to the intellectual and aesthetic tools that it has been his privilege to inherit. Thus education, viewed in its broadest and most significant terms, would help to generate reconstructed communities of men. It is our belief that the schools of California can make a major contribution through the curriculum to such rational and orderly development of our great state and of the larger communities that lie beyond our state borders. This will require, however, attention not only to the curriculum but to the physical characteristics of the schools that we build and to the way in which teachers are prepared. In short, it requires systematic attention to the education enterprise as a system and particularly to the educational climate we create in our schools.

RECOMMENDATIONS

Following are the several recommendations that appear to have potential for the upgrading of the public school curriculum of the State of California.

The traditional California curriculum of the precollegiate educational system is undergoing rapid and fundamental changes. The State Department of Education, The Curriculum Commission, The State Board of Education, local school districts and intermediate units, the scholarly communities of higher education and of the discipline associations are all actively engaged in curriculum development for the elementary and secondary schools.

Several significant curriculum theories and data sources for curriculum development have been neglected in the past. Among data sources particularly the private and public agencies and organizations that conduct research, forecast, and plan for California's growth in the decades ahead have not been drawn into curriculum planning to the extent desirable.

Recommendation I

Mechanisms should be created within the State Government of California whereby the projections made by public and private sectors are continuously fed into the State Department of Education for possible infusion into the curriculum.

Recommendation II

Provision should be made by the State of California to engage the several communities of scholars (the discipline associations and higher education) more centrally in considering theories of curriculum and in selecting high priority content and methods of inquiry that might become aspects of the developing state curriculum for the precollegiate years.

Recommendation III

Instrumentalities should be created whereby a more balanced team, representing the professional educators and the scholars and the public and private sector forecasters and planners, be assigned the joint task of providing optional curriculum designs and appropriate instructional materials.

Recommendation IV

The principal instrument we recommend is a California Commission on Curriculum Research, Design, and Development. Such a Commission would be a much augmented full-time staff of the State Department of Education. The two charts following sketch the input and the output phases of this recommended Commission.

Recommendation V

The present research functions within the State Department of Education related to curriculum and instruction should be relocated within this new Commission and given an enlarged mandate and staff responsible for a continuous input from all the sources indicated. The expanded research facility further should be assigned the task of keeping a current inventory of 1) pupil enrollment by grades in various strands of the curriculum, 2) the match between curriculum expectations and what is taught in classrooms, and 3) some measures of the progress made decade by decade in the quality and quantity of curriculum development.

Recommendation VI

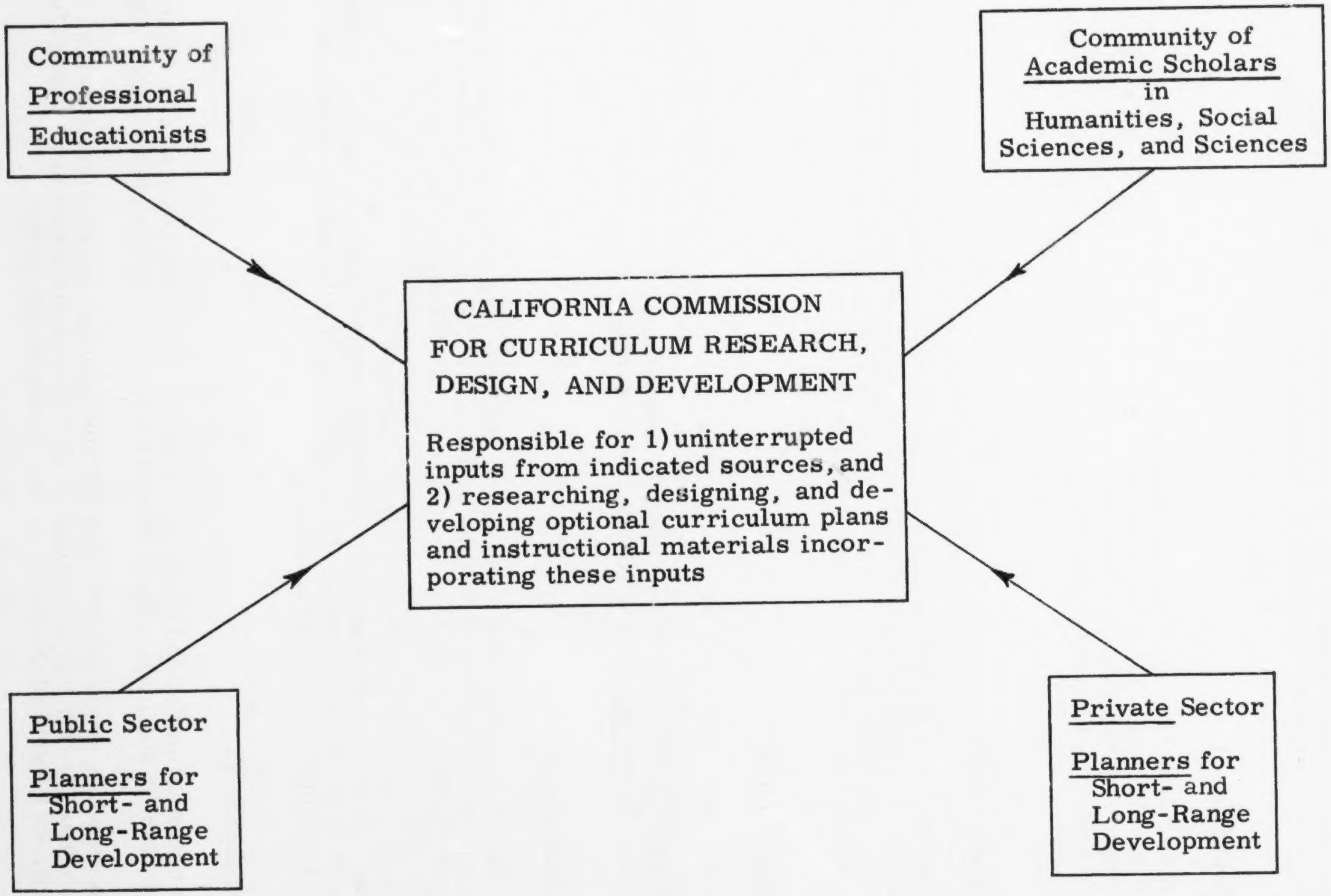
Every encouragement should be given by the State Department of Education to have two things done at the local school district and at the intermediate school unit levels:

1) Give serious attention to trying out the optional curriculum designs and materials provided by the Commission on Curriculum Research, Design, and Development, with regular feedback to the Commission, and

2) Innovate locally with curriculum design and instructional materials beyond that provided by the Commission.

CALIFORNIA CURRICULUM SCHEMA

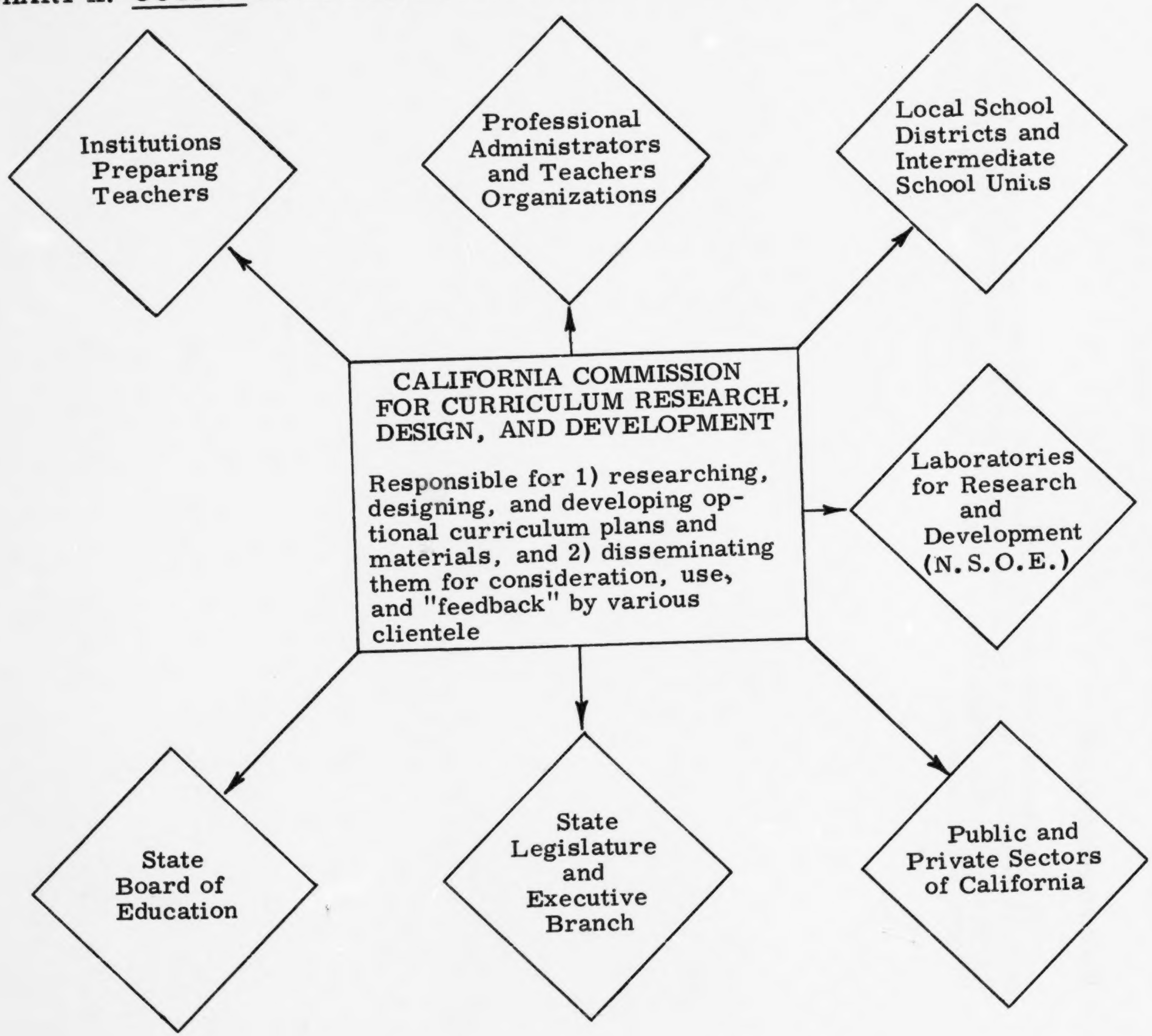
CHART I: INPUT OF CURRICULUM CONTENT FROM DATA SOURCES


Community of Professional Educationists
Community of Academic Scholars in Humanities, Social Sciences, and Sciences
CALIFORNIA COMMISSION FOR CURRICULUM RESEARCH, DESIGN, AND DEVELOPMENT
Public Sector
Planners for Short- and Long-Range Development
Private Sector
Planners for Short- and Long-Range Development

Responsible for 1) uninterrupted inputs from indicated sources, and 2) researching, designing, and developing optional curriculum plans and instructional materials incorporating these inputs

CALIFORNIA CURRICULUM SCHEMA

CHART II: OUTPUT OF OPTIONAL CURRICULUM DESIGNS AND RELATED MATERIALS


Institutions Preparing Teachers
Professional Administrators and Teachers Organizations
Local School Districts and Intermediate School Units
CALIFORNIA COMMISSION FOR CURRICULUM RESEARCH, DESIGN, AND DEVELOPMENT
Responsible for 1) researching, designing, and developing optional curriculum plans and materials, and 2) disseminating them for consideration, use, and "feedback" by various clientele
Laboratories for Research and Development (N.S.O.E.)
State Board of Education
State Legislature and Executive Branch
Public and Private Sectors of California

Recommendation VII

The Commission should work closely, as has the Department of Education in the past, with the several "partners" shown in Chart II: institutions preparing school personnel; professional associations of teachers and administrators; the newly created regional laboratories for research and development; the other groups closely identified with the work of the Department and its Curriculum Commission.

Recommendation VIII

The Educational Code (Division 7) and the educational provisions of the California State Constitution should be updated and rewritten, presumably along the lines recommended by the San Diego Unified School Contract group and by Hollis Allen and Conrad Briner, Contractors.

ATTACHMENT I

A SMALL SAMPLING OF STUDIES AND FORECASTS DONE UNDER NON-STATE GOVERNMENT AUSPICES

Introduction

There is a mounting percentage of the annual budget of independent agencies and corporations that is spent on research and projections relating to the future: studies of demographic changes that could affect markets, new social and engineering technologies that could change the wants of consumers, changes in land use patterns that could have a sharp impact on the economic and social life of the state, etc. Each corporation or financial institution has developed a research and planning arm that keeps the company fluid and moving ahead to meet and try to cope with the threatening clouds on tomorrow's horizons or to create the positive conditions that will facilitate the ushering in of the more desirable conditions.

To list even a representative sampling of such studies as are available to the public would be an enormous task (many of the most valuable and comprehensive studies are properly the confidential property of the company that makes the projections and therefore could not be listed, even if known). But to illustrate the kind of study that is done outside the official planning branch of the Government of the State of California, we here cite a few studies--a sample-- of significance to California's future.

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ATTACHMENT II

SCOPES OF CONTRACTUAL SERVICES: PHASE II CALIFORNIA STATE DEVELOPMENT PLAN PROGRAM

STATE OFFICE OF PLANNING - DEPARTMENT OF FINANCE

Introduction

Created by the Legislature in the 1959 session, the State Office of Planning, located in the Department of Finance, was charged with a number of tasks. The particular function most relevant to our purpose here is, as set forth in the original legislation, to "Prepare, maintain, regularly review and revise a comprehensive, long-range, general plan for the physical growth and development of the State, which plan shall be known as the State Development Plan."

Funded by the Legislature in 1963 and aided by Federal "701" funds, the Development Plan formulation is being undertaken in two distinct phases. Phase I, completed in the fall of 1963, was an inventorying, descriptive, problem-stating effort, emphasizing the analysis of contemporary conditions and circumstances within the State, and producing basic population and economic activity estimates. Phase II, being completed in 1966, is essentially an analytical, alternative-testing, recommendatory effort, culminating in a set of findings and recommendations for use by the State Executive and Legislature.

The work undertaken in Phase II is both broad in scope and specialized in detail. The vast bulk of it is being undertaken through contract by private firms, Universities, and other State agencies, the work of all parties being coordinated and overseen by the Advance Planning Section of this Office. In all, the entire Phase II work program has been divided into more than fifty contractual work items, issued to some twenty-three outside entities.

Each work item, or individual study, was originally drawn up in some detail, for inclusion as a portion of a contract document. Each of these study outlines, called scopes of studies or scope sheets, has been here separated from their particular contracts, and assembled into one publication. Here the reader will have an overview of the entire Phase II effort, what the studies are, who will do them, and what specifically the work will entail, and the date of their completion and the relationship of each study to the others. This document should be of considerable value, not only to each of the participating contractors, but also to anyone interested in the formulation and structure of a statewide research program of this nature.

PHASE II

STATE DEVELOPMENT PLAN

INDEX TO SCOPE SHEETS

Item No.	Work Item	Agency or Contractor
100 Series		
101	Population Analysis and Estimation	U.C. Center
101.1	Migration	Population Research
101.1	Migration	Dept. Motor Vehicles
101.1	Migration	U.C. Center
101.2	Special Labor Force Topics	U.C. Center
102.1	Repercussions Analysis	A.D. Little, Inc.
102.11	Model Refinement	A.D. Little, Inc. U.C. Center
102.11	Model Refinement	Dr. A.B. Suits
102.21	Economic Analysis	A.D. Little, Inc.
102.22	Commodity Flow Study	A.D. Little, Inc.
102.22	Commodity Flow Study	Public Utilities Comm.
102.23	Terminal Requirements	Stanford Research Inst.
102.24	Collaborative Highway Planning	State Office of Planning Highway Trans. Agency
102.3	Special Economic Topics	U.C. Center
102.4	Agricultural Economics	State Dept. Agriculture
103	Development Cost—Revenue Analysis	Alfred W. Baxter & Assoc.
103.11	Completion of Data Bank	Alfred W. Baxter & Assoc.
103.12	Projections of Revenues and Expenditures	Alfred W. Baxter & Assoc.
103.13	Expenditure Impact Analysis	Alfred W. Baxter & Assoc.
103.2	Development Cost Analysis	U.C. Center

Item No.	Work Item	Agency or Contractor
103.2	Development Cost Analysis	Alfred W. Baxter & Assoc.
103.3	Program Analyses	Alfred W. Baxter & Assoc.
200 Series		
201.1	Growth Analysis	U.C. Center
201.1	Growth Analysis	State Office of Planning
201.2	Urban Expansion Requirements	Ruth + Krushkhov
201.2	Urban Expansion Requirements	State Office of Planning
202	Development Policy Analysis	Spangle - Wise
202.11	Current Planning Legislation Analysis	Spangle - Wise
202.11	Current Planning Legislation Analysis	State Office of Planning
202.12	Other Legislative Analysis	Spangle - Wise
202.13	State Program Analysis	Spangle - Wise
202.13	State Program Analysis	State Office of Planning
202.2	Intergovernmental Policies and Programs	Spangle - Wise
202.2	Intergovernmental Policies and Programs	State Office of Planning
203.1	Biophysical Impact Analysis and Projection	Dept. Public Health
203.2	Urban Metropolitan Health Requirements	Dept. Public Health
300 Series		
300.1	Resources Coordinator	Grunwald & Assoc.
301.1	Resources Policy Study	Resources Agency
301.21	Fish and Wildlife	Fish and Game
301.21	Fish and Wildlife (See 303.2)	U.C., I.M.R., La Jolla

Item No.	Work Item	Agency or Contractor
301.22	State Park and Recreation Study	Beaches and Parks
301.3	Forestry Study (See 301.1)	Resources Agency
301.4	Environmental Protection (See 301.1)	Resources Agency
301.4	Environmental Protection	Dept. Public Health
302.1	Refinement of Growth Estimates	A.D. Little, Inc.
302.1	Refinement of Growth Estimates	Resources Agency
302.1	Refinement of Growth Estimates	State Office of Planning
302.2	Land and Water Use Requirements	Dept. Water Resources Dept. Agriculture
302.2	Land and Water Use Requirements	State Office of Planning
302.3	Staging and Reconnaissance	Dept. Water Resources
303.1	Tide and Submerged Lands	Div. State Lands Fish and Game
303.1	Tide and Submerged Lands	State Office of Planning
303.1	Tide and Submerged Lands	U.C., I.M.R., La Jolla
303.2	Ocean Resources	U.C., I.M.R., La Jolla
303.2	Ocean Resources (No sheet, See 303.1)	Div. State Lands Fish and Game
303.3	Urban-Metropolitan Open Space	Eckbo, Dean, Austin & Williams
303.3	Urban-Metropolitan Open Space (See 301.22)	Beaches and Parks
303.4	Agriculture	Dept. Water Resources
303.4	Agriculture	A.D. Little, Inc.
303.4	Agriculture	Dept. Agriculture
303.4	Agriculture	State Office of Planning

Item No.	Work Item	Agency or Contractor
303.5	Environmental Quality and Amenity (See 203.1 and 301.22)	Alexander - Okamoto (Dept. Public Health) (Beaches and Parks)
400 Series		
401.1	Growth Indicators	A.D. Little, Inc.
401.2	Information Procedures	A.D. Little, Inc.
401.2	Information Procedures	State Office of Planning
402	Programming	Alfred W. Baxter & Assoc.
403.1	Comprehensive Transportation Planning	U.C. Center
403.1	Comprehensive Transportation Planning	State Office of Planning
403.1	Comprehensive Transportation Planning (See above scope, no sheet)	Div. of Highways
403.1	Comprehensive Transportation Planning	Robert B. Mitchell
403.1	Comprehensive Transportation Planning	Britton Harris
403.2	Land Use Classification and Inventory	U.C. Center
403.2	Land Use Classification (See above scope)	Dept. Water Resources (Conservation)
403.2	Land Use Classification and Inventory	State Office of Planning
403.3	Photomapping	Dept. Water Resources
403.3	Photomapping	Div. of Highways
500 Series		
501	Summary of Findings	State Office of Planning
502	Policy Formulation	Alfred W. Baxter & Assoc. State Office of Planning
503	Patterns of Land Use Circulation	State Office of Planning
504	Major Public and Private Works and Facilities	State Office of Planning

Item No.	Work Item	Agency or Contractor
600 Series		
601	Public Works Programming	Alfred W. Baxter & Assoc.
602	Process Improvement Measures	U.C. Center
603	Future Planning	State Office of Planning
700 Series		
700	Program Coordinator	Spangle - Wise
800 Series		
801	Program - Policy Advice	Dr. Edward Ackerman
801	Program - Policy Advice	Spangle - Wise
802	Graphic Arts Consultation	Robertson - Montgomery

ATTACHMENT III

PARTIAL LIST OF PERSONS WITH WHOM WE CONSULTED ON PROJECT V - CURRICULUM

Dwight Allen
Professor of Education
School of Education
Stanford University

William Baker
Staff Associate - Appointee, I.D.E.A.
Assistant to John Goodlad
University of California
Los Angeles

Milton Baum
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

C. Kent Bennion
Administrative Assistant
Program Development
Vocational Education
State Department of Education
Sacramento

Leslie J. Briggs
Educational Methods Program
American Institute for Research
Palo Alto

Harold L. Buma
Associate Director
Economic Research
Bank of America
San Francisco

Robert N. Bush
Professor of Education
School of Education
Stanford University

Ian Campbell
State Geologist
State of California
San Francisco

Leslie E. Carbert
Planning Officer
State Office of Planning
Department of Finance
State of California

William Clayton
Assistant General Manager
Agriculture and Industry
California State Chamber of Commerce
Sacramento

Arthur Corey
Executive Secretary
California Teachers Association
Burlingame

W.R. Currie
Chief Financial Economist
Department of Finance
State of California

Martin Dibner
Executive Director
California Arts Commission
Los Angeles

Elliot W. Eisner
Associate Professor
School of Education
Stanford University

A. E. Ellison
Chief Statistician
Pacific Telephone & Telegraph Corporation
San Francisco

John Goodlad
Professor of Education
University of California
Los Angeles
Westwood

Thomas L. Goodman
Project Director (Division of Revision)
San Diego Unified School District
San Diego

Henry Gunn
Consultant
Bureau of Elementary and Secondary Education
State Department of Education
Sacramento

Patricia Hill
Consultant
School Health Education
State Department of Education
Sacramento

Walter Hoadley
Senior Vice-President
Director of Economic Research
Bank of America
San Francisco

Charles E. Hoagland
Director of Transportation and Highway Department
Agriculture and Industry
California State Chamber of Commerce
Sacramento

Edward Hutchenson
Research Faculty
Pacific School of Religion
Berkeley

A. Thomas James
Dean
School of Education
Stanford

Laurence D. Kearney
Administrator Advisor
Curriculum Division
State Department of Education
Sacramento

Douglas Kidd
Supervisor of Music
Richmond Unified School District
Legislative Representative
California Music Educators Association

Larry Kiml
Director of Water and Natural Resources Department
Agriculture and Industry
California State Chamber of Commerce
Sacramento

John Koumb
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

R. McGee
Director of Research Marketing
Pacific Telephone and Telegraph Corporation
San Francisco

C. Frank Mann
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

Charles Moody
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

Rose Nonini
Administrative Advisor
Division of Water Resources
State of California

E. O. O'Rourke
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

Peter Odegard
Professor of Political Science
University of California
Berkeley

Joseph Palaia
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

William Platt
Senior Economist
Stanford Research Institute
Menlo Park

George Roche
Chief of Research Division
Department of Employment
State of California

Tullio Ronzoni
Chief of Systems Analysis
Advanced Design Division
Aerojet-General Corporation
Azusa

W. Sams
Consultant
Bureau of Secondary Education
State Department of Education
Sacramento

George Sawyer
Director of Insurance Department
Agriculture and Industry
California State Chamber of Commerce
Sacramento

G. Wesley Sowards
Associate Professor
School of Education
Stanford University

J. Graham Sullivan
Associate Superintendent of Education
State Department of Education
Sacramento

Paul R. Thompson
Assistant Director
Economic Development and Research Department
Agriculture and Industry
California State Chamber of Commerce
Sacramento

Warren F. Wegis
Director of Agriculture Department
Agriculture and Industry
California State Chamber of Commerce
Sacramento

ATTACHMENT IV

STEPS TAKEN BY CONTRACTOR IN PREPARING THIS REPORT

The contractor started work on this consultative assignment on June 20, 1966. We engaged a part-time administrative research coordinator, a part-time secretary, a Stanford colleague as chief consultant in curriculum, and several leaders in subject matter areas as consultants; further, we involved the students of an advanced graduate Seminar in Curriculum Designing at Stanford University in the initial collection and analysis of data.

Early in our work we initiated collaboration with two fellow contractors--on Instruction (Professor John Goodlad of UCLA) and on Teacher Education (Professor Dwight Allen of Stanford University). This collaboration was undertaken to insure as much complementary work as possible among the several reports.

We contacted a representative sampling of leaders in the private sector of the state and held conferences with them on our assignment. We found the financial banks willing to assign their economic analysts to confer with us and they gave us much useful documentary material. We likewise consulted with the planning divisions of public utilities, private research institutes, manufacturers, labor unions, etc. Wherever we went we were greeted with understanding and enthusiasm because these leaders see in public education a very powerful instrument for preparing the future citizens of this state to solve the mounting problems of our age with greater skills than possessed by the present adult population, which had not had the advantage in their youth of education consciously designed as investment in the continuity and improvement of the encircling society.

We sent three representatives of our Stanford School of Education Advanced Curriculum Seminar to the 8th Annual Industrial Conference in Los Angeles on June 23 to become familiar with problems and plans of the private sector.

In late June, Professors Elliot Eisner and Paul Hanna and Research Coordinator, Robert Johnson, took the Advanced Curriculum Seminar to Sacramento to hold a series of conferences with leaders and planners of public and private sectors of California. The personnel participating in the principal conferences are listed on the schedule attached as Attachment III. The conferences established channels for subsequent return visits, phone conversations, and correspondence. The hosts were most generous in providing us with documents that were of great value to our project in (1) supplying data and (2) pointing out alternative promise and threat of conditions now extant that are certain to change in the decades ahead.

On our return to Stanford the Seminar spent six weeks in follow-up interviews, analyzing data, comparing projections, translating California's future into educational objectives, and proposing mechanisms by which the school curriculum could be kept abreast of the best projections and planning of both private and public sectors. The task proved to be enormous, but we completed a preliminary report of over 200 pages from which the contractor has extracted and condensed his recommendations for the State Committee for Public Education.

The Inventory of Extant Legal Requirements and Curriculum Practices in California

Two of the tasks stated in the "guide to consultant on curriculum" were to (1) inventory the legal requirements of curriculum (by grade level) and (2) inventory the exposure of California's school population to each subject matter field, giving the full statistical picture of who takes what, when, why, and with what degree of success.

The first task, a study of the legal requirements for curriculum, we found to be currently underway through two projects: a contract between Allen and Briner and the Constitution Revision Commission of the California Legislature (Allen, Hollis P. and Briner, Conrad. A Study of the Educational Provisions of the California State Constitution. January, 1966); and a second contract between the San Diego Unified School District and the Superintendent of Public Instruction of the State of California (Ralph Dailard, Superintendent, San Diego Unified School District. A Project to Develop Recommended Revisions of Division 7 of the State of California Education Code). After conferences on these two projects it was obvious that within the limits of time and budget available to the curriculum project contractor it would be unwise to attempt what would be duplications and, by comparison, a superficial study of the legal requirements for California curriculum. The State Committee is now fully aware of the existence of these other two parallel but more exhaustive studies and we respectfully recommend that the State Committee consult the recommendations in these studies on legal requirements.

The second charge, an inventory of curricular practices in California and comparisons with other states, proved to be impossible to accomplish for these reasons:

1. There are no statistics collected at the state level on enrollments by subjects or grades; on degree of exposure to subjects as measured by legal requirements; on suitability or relevance of curriculum program or contents to needs of either pupils or of communities; on degree to which newer curricular innovations have been adopted across the state; or on the relation of curriculum to needs of dropouts or of college bound students.

2. There are very few local school districts or intermediate school units which collect and have tabulated any such detailed data as were requested in this part of the guidelines. We tried to obtain such data from a planned sampling of cities and counties and found the task would be possible only by a massive attack and with large funds to support it.

3. This contract required a completion date that made it impossible during the summer vacation period to get the help of schools to collect the data and impossible even to visit a sample of elementary and secondary classrooms to observe the degree of exposure, the degree of relevance or fit of curriculum to objective, or the quality of the curriculum content offered. We believe strongly that the disclosure of the nonexistence of such data is a serious matter--one that requires State Department attention. But we also point out that, even if the data were available in one neat table in Sacramento, they would not provide an answer to the more important question--to what extent does the curriculum provide exposure to the frontiers of the human mind and spirit which are already observable as characteristic of life in the 21st century? The reason for such an assumption as just stated is found in the fact that the curriculum needs to be infused with the new content which is emerging in the studies and projections of the public and private scholars and planners, before one can have a sound curriculum frame of reference against which to evaluate what goes on in classrooms throughout the state. One could recommend that a statewide research project be undertaken immediately to find answers to the questions raised in the guidelines to the

curriculum contractor; it is questionable whether such an effort and the attendant costs would be justified by the findings. First a reconstruction of curriculum designs and of development mechanisms of the State Department of Education and of the intermediate and local districts; secondly, a period of infusion of the new context; thirdly, a revision of the legal requirements to support the newer curriculum efforts; and then, an inventory mechanism in the research branches of state and local districts to get at the answers requested in the guidelines could be useful and properly constructed.

APPENDIX L

EDUCATION OF DISADVANTAGED CHILDREN IN CALIFORNIA

A Report to the California State Committee on Public Education

By:

Alan B. Wilson, Arthur R. Jensen, and David L. Elliott

University of California
Berkeley, California

December, 1966

This report was prepared pursuant to Standard Agreement Number 3090 with the State Department of Education, State of California.

APPENDIX L

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APPENDIX L

EDUCATION OF DISADVANTAGED CHILDREN IN CALIFORNIA

Alan B. Wilson, Arthur R. Jensen*, and David L. Elliott

University of California, Berkeley

December, 1966

Shifting euphemisms such as "educationally disadvantaged" or "culturally deprived" which have been applied in recent years by educationists to children of the poor and of minority groups whose modal academic achievement falls below national averages, are fraught with ambiguity. Simultaneously seeking to avoid stigmatization[1] and to impute public responsibility for amelioration of a "problem," the referent of these terms remains ill-defined.

Although unspecific, the terms reflect a conviction that the varying rates of academic success and attainment among identifiable social groups are consequences of systematic differences in environmental circumstances--rather than genetic endowment--and that these circumstances, whatever they may be, which impede educational attainment constitute inequalities in educational opportunity which should be rectified.

There is no question that there are gross differences in educational attainment among social groups in California as elsewhere. The median years of schooling attained by adults of different racial and ethnic groups reported in the 1960 census, for example, provides a rank order which bears a gross relationship to indices of educational attainment of their children in school. Japanese and white "Anglos" have acquired the most schooling; Filipinos, Mexican-Americans, Indians, and Negroes have attained the least.

A survey of secondary school students in Richmond, California, for example, shows large average differences in achievement between the ethnic groups represented. The orientals and the white "Anglos" perform above the average for the district; Mexican-Americans and Negroes far below average. The data are shown in Table 2, below.

Differences between ethnic and national groups in school achievement are confounded with differences in social class--occupation, income, status, and style of life. First and second generation immigrants from Europe before World War I -- Irish, English, Italians, Poles, . . . --were among the "laggards in our schools"[2] whose educational attainments and measured mental abilities were below the average of native-born "Anglos." As these groups have acquired parity of social status, the level of achievement of their children in school has come to approximate that of the "Anglos."[3]

While disproportionate numbers of minority groups have low socioeconomic status, in absolute frequency "Anglos" outnumber ethnic minorities among the poor--and their children outnumber those of minority group origin among low achievers. In Table 2, below, for example, while sixty-two per cent of the Negro students had verbal reasoning test scores in the lowest category--between zero and nine--they are a minority of the students in that category. Over half of the students with scores below ten are white

---

*Professor Jensen is at the Center for Advanced Study in the Behavioral Sciences, on leave from the University of California, 1966-67.

Table 1

Population distribution and median years of schooling of adults, 25 years of age or over, by ethnicity; California, 1959*

Ethnicity	Population distribution Frequency	 Per cent	Median years of schooling of adults 25 and over
"Anglo"	13,028,692	82.9%	12.1 years
WPSS**	1,426,538	9.1	8.5
Negro	883,861	5.6	9.8
Japanese	157,317	1.0	12.4
Chinese	95,600	0.6	10.1
Filipino	65,459	0.4	8.2
Indian	39,014	0.2	9.2
All others	20,723	0.1	
Total	15,717,204	99.9%	12.1 years

*U.S. Bureau of the Census, U. S. Census of the Population: 1960
**White persons of Spanish surname

Table 2

Percentage distribution of Differential Aptitude Test scores in verbal ability by ethnicity; Richmond secondary school students, 1965*

Ethnicity	Number of cases		Raw test score distribution			
	Sample	Population	00-09	10-19	20+	Total
Negro	657	2,792	62%	30%	8%	100%
Mexican-American	66	557	38	49	13	100
White "Anglo"	1,126	10,661	19	40	41	100
Oriental	41	471	14	45	41	100
Total	4,077	14,481	25%	39%	37%	100%

*Unpublished survey data. The large advantage of Mexican-Americans over Negroes shown in these data from a Northern California community does not reflect statewide or national patterns.

"Anglos." While members of visible ethnic minorities have especially intensive problems stemming from prejudice, discrimination, and denigration,[4] they share with poor whites many of the environmental deprivations associated with poor scholastic achievement.

Although there is no question that there are substantial differences in educational achievement between social groups, the ambiguity of terms such as "deprived" and "disadvantaged" stems from a lack of concensus on the extent to which differences stem from environmental circumstance and the proper meaning of "equality of educational opportunity."

Most behavioral scientists would agree today that we have no way of directly measuring genetic endowments, of attributing the measured attainments of an individual proportionately to heredity or environment, or of estimating ceilings to potential.[5] From a policy point of view, however, the knowledge that deliberate training[6] or changes in social circumstance[7] can lead to variations of twenty to thirty points in IQ test scores (which, whatever they may measure, are highly predictive of academic success) suffices. This amounts to a difference between "dull normal" and "college potential" students. Since it has been fashionable in psychometry to seek "reliable" measures, experimentation in the modification of IQ scores has not been prolific.

Within the rather narrow range of environmental variation in learning experiences of high-sixth-grade students in the Berkeley elementary schools, for example, we find that four crude social variables (actually three, since there are virtually no sex differences) account for thirty-one per cent of the variation in California Mental Maturity (IQ) test scores. Table 3 is of further interest because it shows that the differences between schools in average IQ is not accounted for by the direct effects of race and familial social status.

On the other hand there is little concensus on the meaning of the phrase "equality of educational opportunity." The traditional liberal view of equality of opportunity which motivated the extension of public elementary and secondary education in this country would, as far as possible, remove legal and economic handicaps to the acquisition of education by intelligent and industrious youths whose parents sought their social advancement.[8]

The more radical conception calls for the provision of experiences which generate intelligence and arouse interest even where the influence of the home and neighborhood may be impoverished or hostile. This latter view that equality of opportunity requires the nurture of talent against countervailing social forces--as opposed to the recognition and selection of talent which is revealed--is far from universal among school people and the general public.

The schism between "liberal" and "radical" views of opportunity underlies many of the basic policy issues in public education: the allocation of resources to accelerated or compensatory programs; the desirability and timing of grouping or tracking; the extension of public education into pre-school years and to parent education; the proper bases for grading; functions of counselling and guidance;. . . .

Identification of socially disadvantaged students

Conceptually a student can be defined as "socially disadvantaged" if his intellectual attainments are substantially less than they might otherwise be as a direct or indirect consequence of his ascribed position in the social structure. Learning behavior, however, is multiply determined, and our solid knowledge of the socio-cultural factors affecting learning is fragmentary and largely statistical.[9]

Table 3

Analysis of California Mental Maturity test scores by school, sex, race, and father's occupation; Berkeley high-sixth-grade students, 1959*

Source of variation	Sample number	Partial regression coefficient
School		
Segregated (white, middle-class)	263	+3.4
Integrated	155	-0.7
Segregated (Negro, working-class)	133	-5.9
Sex		
Boy	262	-0.3
Girl	289	+0.3
Race		
Negro	98	-7.4
Oriental	46	+4.1
White	407	+1.3
Father's Occupation		
Unskilled manual	89	-5.1
Skilled and semiskilled manual	156	-3.6
"White collar"	113	+2.8
Professional and executive	193	+3.7
Total sample mean	551	116.9
Squared multiple correlation		.31

*Unpublished survey data

We know, for example, that lower-class children, on the average, achieve more poorly than do middle-class children in school, and we can identify numerous causal links which are associated with social class on the one hand, and with achievement on the other, which help us to interpret the relationship. One minor link,[10] for example, is that lower-class families have, on the average, more children, and the number of children in a family is inversely correlated with achievement. This relationship, in turn, can be interpreted by the typical reduction in intensity and frequency of parent-child interactions in the larger family. Yet certainly not all lower-class families have large numbers of children, or middle-class families have few; nor do all children with many siblings do poorly in school.

As a consequence of this partial knowledge, or indeterminacy of behavior, in practice the clinical identification of an individual student as "disadvantaged" is commonly a retrospective fallacy. If a child who is achieving poorly in school comes from a lower-class family, belongs to a minority group, lives in an urban ghetto or a migrant farm community, he is regarded as "disadvantaged." The rarer child from an overtly similar environment who does well in school is not so labelled.

Differential diagnosis of retardation

Retardation stemming from social sources, at least in principle, can and must be clearly distinguished from what we will here refer to as "primary retardation." Primary and social retardation are not at all mutually exclusive: one may exist without the other, or they may exist in independently varying degrees simultaneously. There is substantial evidence of some degree of correlation, albeit quite low, between primary and social retardation in the total population.[11]

Primary retardation can be subdivided into three main types, all having an essentially biological causation. (1) It is an inevitable consequence of what is called by geneticists the multifactorial or polygenic inheritance of intelligence; (2) it is a result of a single major gene defect; and (3) it is a result of brain damage of one kind or another.

Polygenic inheritance.--Intelligence is inherited in much the same fashion as height. It is the result of a large number of genes each having a small additive effect. Because of random assortment of these genes, the total additive effect will be normally distributed in the population. Thus the hereditary mechanism--in effect a random lottery--that results in one person's being bright results in another's being dull, and the person who is dull or mentally retarded for this reason is, biologically speaking, no more abnormal or pathological than the average or bright person, or the short or tall person. He is simply a part of normal variation.

The great misfortune of socially disadvantaged children is that many are treated educationally (and they perform, accordingly) as if they were at the lower end of the genetic distribution of intelligence, when in fact they may be in the middle or even at the upper end of the distribution. Failure to distinguish between hereditary and social sources of retardation, as well as being an injustice, results in a waste of educational potential and talent. The consequences are especially damaging to the social progress of minority groups, and the costs are borne by our whole society. Distinguishing between social and genetic retardation is a difficult diagnostic problem among the disadvantaged. This diagnostic problem does not arise among privileged children, with rare exception, since severe retardation in this group is almost always of the primary type.

Major gene defect.--Practically all forms of mental deficiency where tested IQ scores are below 50 are the results either of severe brain damage or of major gene defects.[12] Examples of major gene defects are Mongolism, phenylketonuria, and amaurotic idiocy. Genetically these intellectual defects are analogous to dwarfism in the trait of stature. They are caused by Mendelian inheritance of a single gene or by a mutant gene, which for all practical purposes may be regarded as completely overriding the normal polygenic determinants of intelligence. The resulting severe degree of mental defect, which is generally easy to diagnose in the first days or weeks of life, is not of concern in the present discussion, except to distinguish it from retardation which constitutes a part of normal variation.

Brain damage.--Brain damage, especially prenatal and perinatal, is a continuous variable. That is, its effects can range from the negligible to the disastrous, and the effects can be manifest at all levels of genetic potential. Thus a child who suffers an abnormal degree of anoxia at birth who would otherwise have grown up to have an adult IQ of, say, 150 may, as a result of the brain damage incurred by anoxia, have an actual IQ of 140. The literature on the subject suggests that brain damage, to a degree that makes a difference in measurable mental ability, is sufficiently rare that it does not constitute an appreciable source of variance in intellectual ability in the population as a whole. An upper-limit estimate would be about five per cent of the total variance of measured intelligence, which means that, on the average, brain damage lowers the IQ only slightly more than three IQ points. There is also evidence that brain damage has a higher incidence in lower socioeconomic groups for whom the mother's nutrition, prenatal care, and obstetrical practices are substandard.[13] All possible efforts should, of course, be made to minimize these conditions in order to decrease the chances of brain damage. This ameliorative effort should prove to be considerably easier than most of the measures that will be needed to combat the causal agents of social retardation.

All three types of primary retardation have three major effects in common: they result in below-average measured intelligence (IQ), in below-average educability in school subjects, and in a slow rate of what we shall refer to as "basic learning ability." Retardation stemming from social sources, on the other hand, is distinguishable from primary retardation, at least in principle, on this third factor--basic learning ability. While social disadvantage results in lowered IQ and lowered school achievement, it does not, except in extreme rare cases, result in lowered basic learning ability. This is a theoretically and practically important distinction, because it means that in trying to improve the educability of disadvantaged children we are not trying to make over genetically poor material, but we are trying to allow sound innate learning potential to manifest itself in our educational system. But now, to further develop this topic, we must clarify the special meanings given to the terms "intelligence," "basic learning ability," and "educability."

Intelligence, learning ability, and educability

Standard intelligence tests, such as the Stanford-Binet and Wechsler, are measures of specific knowledge and problem-solving skills which have been acquired by the testee at some time prior to the test situation. Mental Age is determined directly from the amount of such knowledge and skill. By taking into account the amount of time the individual has had to acquire this knowledge, that is, his chronological age, we obtain a measure of the rate at which he has learned, which is expressed as the IQ score.

The validity of the IQ test score as a measure of learning ability, therefore, depends to a large extent upon equal exposure to and practice with the kinds of knowledge and skills that the test calls upon. Since intelligence tests were originally devised to predict school performance, they call upon those kinds of knowledge and cognitive skills which are similar to the kinds of learning that are required in school, skills which are more or less prerequisite for school learning and which have considerable transfer value in the classroom.

Now, if IQ is a measure of the rate at which an individual has learned certain facts and skills, we should expect that rates of learning to perform tasks of the type used by experimental psychologists for the study of learning should show substantial positive correlations with IQ. This, in fact, is exactly what has been found.[14] But there is an important exception. The correlation between IQ and learning ability as measured directly in a controlled laboratory learning task is much higher among middle-class children than among lower-class children.[15] This means that the IQ is a good measure of learning ability in middle-class children but not in lower-class children. Another important aspect of this finding is that the correlation between learning ability (as measured in a standard learning task) and IQ breaks down in the below-average range of IQ--especially in the 60 to 85 IQ range. The correlations between learning ability and IQ in the above-average IQ range do not appear to be appreciably different among lower-class and middle-class children.[16]

Furthermore, in comparing level of performance--speed of learning--as a function of IQ level and of social class, it has been found in several studies that lower-class children with low IQs between 60 and 85 are, on the average, markedly superior in learning ability to middle-class children with low IQ scores. In the range above 100, on the other hand, there are not significant differences in learning ability between lower- and middle-class children with similar IQ scores. This suggests that once the IQ has exceeded a certain level--somewhere in the neighborhood of 100 to 110--it gives a fairly accurate assessment of learning ability regardless of social-class level. In the lower IQ range (which, incidentally, contains the modal performance of lower-class children) the IQ test grossly underestimates learning ability among lower-class children.

We are speaking here, of course, of averages. A certain proportion of lower-class children with low IQ scores are slow learners in the laboratory tasks just as are middle-class children with low IQ scores. The middle-class low-IQ groups seem to be made up almost completely of slow learners. But the lower-class low-IQ group contains all levels of learning ability. The probability of finding a very fast learner, with a learning speed comparable to that of "gifted" middle-class children, seems to be greater in the lower socioeconomic group with low IQ test scores than in the average range of either social-class group. This suggests that the IQ is almost totally unpredictive of learning ability in the low-IQ range for lower-class children.

It should be noted that the majority of lower-class children are in the below-average IQ range. This is especially true for Negroes. On a national average only about 25 per cent of Negroes exceed the median IQ of the white population.[17]

In view of what has been said above, it might seem puzzling why the IQ is substantially correlated--between .50 and .70--with school achievement regardless of social class. Ability for school learning may be referred to as educability. Educability is much more complexly determined than either intelligence or learning ability. For one thing, it depends not only upon learning ability of the type measured in the laboratory, in which transfer from prior learning is relatively unimportant, but also upon a fund of prior knowledge, skills, and acquired cognitive habits, much of which is tapped by intelligence tests. But educability also involves much more than these intellectual abilities, as indicated by the fact that intelligence tests do not account for much more than 50 per cent of the variance in school achievement. A host of other factors must be taken into account to "explain" the remaining variance. These are usually described under labels such as attitudes, motivation, work habits, regularity of school attendance, docility, parental interest and help in school work, and so on.

Environmental influences on intelligence and educability

In recent years there has been a shifting trend of emphasis on the part of behavioral scientists working in this area. The trend has been away from the rather crude socioeconomic variables toward more subtle intrafamily and interpersonal variables. This shift in emphasis is given cogency by the fact that socioeconomic variables, such as income, occupation, neighborhood, and the like, do not correlate as highly with intelligence and educability as do variables measuring interpersonal behavior patterns which more directly relate to the development of intelligence such as whether the parents read to the children during the pre-school years, whether the family eats together, whether children are brought into the conversation at the dinner table, and other features of parent-child interaction--especially those involving verbal behavior. The usual socioeconomic variables that have been found to correlate with IQ and educability have shown correlations in the range from .30 to .50. At most only about 30 per cent of the variance in intelligence can be predicted from a composite of various indices of status. (See, for example, Table 3.)

What are some of the environmental variables most highly associated with intelligence? Wolf[18] found that ratings of thirteen process variables that describe interactions between parents and children would yield a multiple correlation with intelligence of .76. These variables may be classified as follows:

A. Press for achievement motivation

1. Nature of intellectual expectations for child

2. Nature of intellectual aspirations for child

3. Amount of information about child's intellectual development

4. Nature of rewards for intellectual development

B. Press for language development

5. Emphasis on use of language in a variety of situations

6. Opportunities provided for enlarging vocabulary

7. Emphasis on correctness of usage

8. Quality of language models available

C. Provision for general learning

9. Opportunities provided for learning in the home

10. Opportunities provided for learning outside the home (excluding school)

11. Availability of learning supplies

12. Availability of books (including reference works), periodicals, and library facilities

13. Nature and amount of assistance provided to facilitate learning in a variety of situations

What presently are thought to be the most crucial psychological deficiencies of disadvantaged children can be grouped into three main categories: perceptual and attentional abilities, verbal and cognitive abilities, and motivational factors. A knowledge of the exact nature and etiology of deficiencies in these areas is, of course, highly germane to methods of prevention and remediation.

We have not mentioned motor abilities in connection with the disadvantaged, but because of current practices in some school programs for the socially disadvantaged, the topic deserves a few words. Retarded motor development, poor muscular coordination, balance, and the like, are known to be characteristic of mental retardation of the primary type--particularly in retardation associated with brain damage. There is no evidence, in fact there is evidence to the contrary, that disadvantaged children are retarded in motor development or are in any way deficient in this sphere.

Yet in some kindergartens and primary grades we find disadvantaged children being required to engage in various tasks intended to develop or improve motor coordination, such as "rail walking"--balancing on the narrow edge of a two-by-four. Though such exercises have been found helpful for primary retardates, there is no reason to believe they are anything but a waste of school time for disadvantaged children, unless these children also show definite signs of primary retardation.

Perceptual abilities--From the rather meager research now available, it appears that low-SES children come to kindergarten or first grade with less well developed visual and auditory discrimination abilities.[19] The deficiency is not great in an absolute sense, but it is generally thought to hinder learning to read. Exercises in perceptual skills have been developed which apparently overcome these perceptual deficiencies fairly readily.

Since ability to discriminate differences among shapes and sounds are important prerequisite skills to school learning, it is recommended that these abilities be assessed in pre-school and be compared with middle-class norms, and appropriate remedial training be applied where deficiencies exist. Special tests, norms, and remedial techniques have still to be developed for this purpose, though some techniques already have been developed for experimental use.

Attentional ability--To anyone who has observed disadvantaged children in the classroom, particularly in the primary grades, one of the most outstanding behavioral characteristics is these children's failure to sustain attention. This is not so conspicuous in kindergarten but becomes clearly manifest in the first grade as soon as reading is introduced and other structured cognitive demands are made upon the child. Attentional ability is acquired and reinforced in infancy and early childhood. It develops differentially in various kinds of situations and is reinforced through the parent-child relationship. Typically, among disadvantaged children, attention is poorly developed with respect to adult speech and whatever things the adult tries to make the focus of the child's attention. These particular attentional abilities are developed in middle-class children from an early age, probably through certain features of the parent-child relationship (reading to the child, mutual play accompanied by relevant speech, etc.) which are relatively lacking in lower-class parent-child relationships.

These activities are mutually reinforcing to the parent and child: attentional behavior on the child's part reinforces the parent's interaction with him, and the parent's interaction with the child further reinforces and shapes the child's attention. It so happens that this shaping of attention in middle-class children is probably not only greater in sheer amount than in lower-class children, but is developed in relation to activities that more nearly resemble those of the school and of the pupil-teacher relationship.

Thus, attention is less well developed in the low-SES child at the time he enters school. But, in addition, a secondary phenomenon takes place: there is an actual deterioration of the child's attentional ability, usually beginning in the first grade. Some children begin actively to resist focusing attention on teacher-oriented tasks and activities. Normal attentional behavior gives way to a kind of seemingly aimless and disruptive hyperactivity. This is an almost universal observation by teachers of the disadvantaged (especially disadvantaged Negro children).

This suggests the possibility that the gap in difficulty between the tasks required of the disadvantaged child in the kindergarten and those encountered in the first grade might be too great in most schools. If the child cannot meet the tasks set by the teacher with successful performance (not merely receiving indiscriminate approval by the teacher for any quality of performance), the child gradually develops aversion to the school-learning situation. His attention is, as teachers are heard to say, "turned off," and distractibility and aimless hyperactivity ensue. The gap between preschool or kindergarten and first or second grade is not now being bridged satisfactorily for the socially disadvantaged child. The steps in the learning requirements are too big. For the middle-class child the transition from home to school is clearly a much less radical change from the activities and demands of the home than for the disadvantaged child.

Language Deficiencies--By far the greatest and most handicapping deficiencies of the disadvantaged child are found in the realm of language. But the term language is here used in a much broader and psychologically more profound sense than is generally appreciated by teachers of English, speech therapists, and the like. The immediately obvious aspects of the language of the disadvantaged--the lack of genteel English, incorrect grammar, poor pronunciation, use of slang, etc.--are psychologically the most superficial and the least important from the standpoint of intellectual development. This is not to minimize the social, economic, and occupational advantages of good oral and written English. It is simply important to realize that the language deficiencies of lower-class children psychologically have a much more detrimental effect than the obvious social disadvantages of their language habits. Because the eschewal of certain lower-class language habits by the middle-class is perceived by some persons as undemocratic snobbery, there has grown up another utterly erroneous notion to the effect that lower-class language is "just as good as" any other kind of language, in the same sense that English, French, and German, though obviously different from one another, are similarly adequate for the expression of meaning. Thus, social class differences in language habits are viewed as desirable or undesirable only according to one's acquired tastes, values, and standards, and--to paraphrase the argument--who is to say that middle-class values are any better than lower-class values? This line of thinking can be quite discredited in terms of our growing understanding of the functions of language. Language serves not only a social function as a means of interpersonal communication, but it is also of crucial importance as a tool of thought. It is in this latter funtion that lower-class language deficiencies are most crippling psychologically.

General Language Characteristics

With respect to language functions, Metfessel has listed the following general characteristics of culturally disadvantaged children:[20]

1. Disadvantaged children understand more language than they use. Even so, by second grade the comprehension vocabulary of such children is only approximately one-third that of the average for their age cohort. By sixth grade it is about one-half.

2. Disadvantaged children can use a great many words with fair precision, but not the same selection of words commonly used in school. It has been estimated that something less than half the words known by middle-class preschoolers are known to slum children. Even such common name words as sink, chimney, honey, beef, and sandwich are learned by disadvantaged children one or two years later than by other children.

3. Disadvantaged children frequently are handicapped in language development because they do not have the concept that objects have names and that the same objects may have different names.

4. Disadvantaged kindergarten children use fewer words with less variety to express themselves than do kindergarten children of higher socioeconomic status.

5. Disadvantaged children use a smaller proportion of mature sentence structures, such as compound, complex, and more elaborate constructions. This is not limited to the non-English-speaking child, but occurs among most children who come from a disadvantaged background.

6. Disadvantaged children learn less from what they hear than do middle-class children. Part of this deficiency has been attributed to the fact that disadvantaged children come from a milieu in which radio, television, and the sounds of many people living together in crowded quarters create a high noise level which the child eventually learns to shut out, so that verbal stimuli generally become less salient.

7. Disadvantaged children are less likely to perceive the symbolic and conceptual aspects of their environment; the verbal means of abstraction and analysis are relatively undeveloped.

8. Disadvantaged children frequently end the reading habit before it is begun. The cycle of mastery which demands that successful experiences generate more motivation to read which in turn generates higher levels of skill sufficient to prevent discouragement, and so on, often never gets underway. These children, of course, have poor adult models for reading behavior.

In general, it has been found that throughout the entire sequence of language development, from the earliest stages of speech in the first two years of life, there is retardation among disadvantaged children. Furthermore, this retardation should not be thought of entirely as a matter of the child's merely lagging behind the middle-class child, with the same level of development merely being attained somewhat later. The characteristics of the language habits that are being acquired and the kinds of functions the language serves in the child's experience actually shape his intellectual development, especially the development of the ability for abstraction and conceptual learning. Poor development of these abilities places a low ceiling on educational attainment.

The most detailed analysis of social-class differences in language characteristics which are important to the development of cognitive abilities has been made by Basil Bernstein in England.[21] Except for minor details, his findings and conclusions seem to be applicable to social-class differences in the American cultures as well as in the British. If anything, social-class differences in language behavior of the type that concerns Bernstein are probably even more pronounced here than in England. It is important, however, that Bernstein's type of sociolinguistic analysis be applied to some of the various American low-SES subcultural groups.

In characterizing social-class differences in language behavior, Bernstein distinguishes two main forms of language, which he refers to as public and formal. A formal language is one in which the formal possibilities and syntax are much less predictable for any one individual, and the possibilities for sentence organizations used to clarify meaning and make it explicit are finely variegated. In public language, on the other hand, the speaker operates in a mode in which individual selection and permutation are grossly restricted. In formal language the speaker can make highly individual selection and permutation. Formal language, therefore, can fit the speaker's purposes with much greater subtlety and precision and does not depend to any marked degree upon inflection, gestures, facial expressions, and a presupposed prior mutual understanding of the main gist of the communication, as expressed in the highly frequent use of the phrase "you know what I mean" in lower-class speech.

While middle-class persons can understand and use public language as well as formal language, lower-class persons are more or less restricted to public language. Public language is almost completely limited to the single function of social intercourse within a community of tacit common understandings and values. It is not designed for expository functions, for detailed representation of past events or future plans, or for manipulating aspects of one's experience abstractly and symbolically. In public language, the quantity of speech is not reduced, but the variety of functions which speech can serve is limited. This becomes especially important in the realm of private or internal speech, where the person must use language to recall, review, structure, or otherwise mentally manipulate his past or his anticipated experiences, aims, plans, problems, and so on. Bernstein lists the following characteristics of public language:

1. Short, grammatically simple, often unfinished sentences with a poor syntactical form stressing the active voice.
2. Simple and repetitive use of conjunctives (so, then, because).
3. Little use of subordinate clauses to break down the initial categories of the dominant subject.
4. Inability to hold a formal subject through a speech sequence; thus, a dislocated informational content is facilitated.
5. Rigid and limited use of adjectives and adverbs.
6. Infrequent use of impersonal pronouns as subjects of conditional clauses.
7. Frequent use of statements where the reason and conclusion are founded to produce a categoric statement.
8. A large number of statements/phrases which signal a requirement for the previous speech sequence to be reinforced: "Wouldn't it? You see? You know?" etc. This process is termed 'sympathetic circularity.'
9. Individual selection from a group of idiomatic phrases or sequences will frequently occur.
10. The individual qualification is implicit in the sentence organization: it is a language of implicit meaning.

In contrast, the following are characteristics of formal language:

1. Accurate grammatical order and syntax regulate what is said.
2. Logical modifications and stress are mediated through a grammatically complex sentence construction, especially through the use of a range of conjunctions and subordinate clauses.
3. Frequent use of prepositions which indicate logical relationships as well as prepositions which indicate temporal and spatial contiguity.
4. Frequent use of the personal pronoun 'I'.
5. A discriminative selection from a range of adjectives and adverbs.
6. Individual qualification is verbally mediated through the structure and relationships within and between sentences.
7. Expressive symbolism discriminates between meanings within speech sequences rather than reinforcing dominant words or phrases, or accompanying the sequence in a diffuse, generalized manner.
8. It is a language use which points to the possibilities inherent in a complex conceptual hierarchy for the organizing of experience.

Robert Hess, of the University of Chicago, has found considerable evidence of these two modes of language behavior in the parent-child interactions of lower-class and middle-class Americans observed in situations in which the mother is required to instruct her child in learning a simple task.[22] The language of the lower-class mother does not provide the child with cues and aids to learning to the same extent as the language of the middle-class mother. Since children tend largely to internalize the language of their home environment, mainly that of the parents, the low-SES child acquires an inferior set of verbal techniques which he can apply on his own in learning and problem-solving situations.

Verbal Mediation of Cognitive Functions

From the standpoint of the development of intelligence, the most important aspect of language is its relationship to a variety of processes listed under the general heading of verbal mediation.[23]

One of the crucial psychological differences between low-SES and middle-SES children is in the spontaneity of verbal mediation, especially in ostensibly nonverbal learning or problem-solving situations.[24] Low-SES children are much less likely than middle-SES children to talk to themselves as an aid to "thinking." On ostensibly nonverbal tests and learning tasks which nevertheless require private verbal mediation, disadvantaged children perform especially poorly. This is the main reason that so-called nonverbal intelligence tests are not by any means "culture free" or "culture fair."

Several main processes of verbal mediation, that is, covert language, can be identified.

Labeling--In middle-class children the habit of labeling or naming objects and events in the environment becomes automatic and unconscious. It is practically

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impossible to look at, say, a chair or a book, or any object, without these stimuli eliciting a verbal (usually covert) response of naming. Perception and verbalization are more or less unified, so that one cannot see a chair without thinking "chair," at least when the chair is the focus of one's attention. At first, in very young children, this naming tendency is overt; it gradually becomes covert. Most middle-class children enter school with this particular form of verbal equipment already fairly well developed.

Lower-class children do not. Apparently the conditions under which the lower-class child spends his pre-school years are insufficient to instill the habit of naming or labeling, especially in contrast to the milieu of the middle-class child where the verbal identification of objects and events is commonplace. Experimental evidence has shown conclusively that verbal labeling greatly facilitates learning, retention, and problem solving. Furthermore, this type of verbal mediation is learned in a particular environment; it is not an innate aspect of learning ability. It is a form of behavior which must become habitual and automatic in children if they are to develop their educational potential.

The Associative Network--Words in context acquire associations. These verbal associations have other associations, and so on, to form an elaborate, ramifying verbal associative network. This network is thought to act, more or less automatically and unconsciously, as a broad source of tranfer for learning and retention of a conceptual nature. It is the psychological background or "net" which enmeshes the child's experiences in the classroom. Word association experiments on children indicate that lower-class children have a more sparse, less rich associative network. Even the words they know and use have, in this sense, less associative meaning to them, and the associations are not as structured in terms of hierarchical characteristics that facilitate categorization, conceptual analysis, and the like. The quality of the child's verbal environment is the chief determinant of the richness and structure of his associative network. All children who can speak have an associative network, but the network of associations of disadvantaged children is more like that of middle-class children who are two or three years younger.[25]

Abstraction and Categorization--Conceptual learning, which is entailed in many school tasks, requires the ability to abstract, and to categorize things in terms of various abstracted qualities. For example, plates, wheels, doughnuts, and pennies, have in common the abstract property of being round. Young middle-class children, and somewhat older disadvantaged children, are not likely to perceive anything in common among these disparate objects. The objects do not arouse abstract associations, and consequently the number of ways the objects can be grouped will be limited or will be entirely idiosyncratic, depending upon the child's particular experience with the objects--such as the fact that his mother may have served him doughnuts on a plate. The ability to disassemble what is registered by the senses into various conceptual attributes is an important ingredient of educability, and it is greatly facilitated by, if not wholly dependent upon, verbal behavior, either overt or covert.

Syntactical mnemonic elaboration--The ability to respond to one's experiences on the verbal level in a way that makes use of the structuring ordering properties inherent in the syntactical aspects of language greatly facilitates learning, comprehension, retention, and retrieval of, and reasoning involving, various kinds of experience, both verbal and non-verbal. Language imposes its structure upon raw experience, and structures and organizes it in ways that the subject is able to recall for use at a later time. This ability is limited for the person who either has not acquired or does not habitually use the logical and structural properties contained in formal language.

Patterns of Academic Development

When we step back from the detailed examination of the intrafamilial sources of early differentiation in intelligence and educability to look at the general social patterns of academic development in the population, an interesting relationship emerges. From the time of entry into the first grade through the senior high school years the measured verbal achievement level of major disadvantaged minority groups--Negroes and Mexican-American--are approximately one standard deviation behind their white compeers.[26] That is, at each grade level the average verbal achievement score for Mexican-Americans and Negroes is equivalent to about the fifteenth percentile for white students.

Since the achievement of students becomes more and more spread out as they progress through the grades, the 15th percentile is 1 1/2 years behind the average of grade six, 2 1/4 years behind the average in grade nine, and 3 1/4 years behind the average in grade twelve. Thus the majority of minority group children, together with disproportionate numbers of lower-class white children, fall farther and farther behind their schoolmates as they progress through their school years.[27]

The contrast between the achievement levels of members of different social classes--indicated by fathers' occupations--is as sharp as the contrast between the average achievement of whites and Negroes. Looking at data from the Richmond schools, again, in Table 4, we see that the difference in mean verbal reasoning test scores between Negroes and whites is 31 percentile points (just one standard deviation), while the difference in mean scores between the children of professionals and managers on the one hand and that of the children of unskilled laborers and the unemployed is 32 percentile points.

While race and occupational status are confounded--a disproportionate number of Negroes being unskilled laborers and unemployed--analyses of variance such as the one shown in Table 3 show that the independent effects of each classification are about equal.

Effects of schools on achievement

While it should be clear from the foregoing discussion that there are substantial differences in "educability" between children which stem from social disadvantages before they enter the public school system, the effects of schools in ameliorating or exacerbating these differences are important for educational planning. Of particular relevance is an examination of the kinds of investments and curricular practice which seem to make a substantial difference to levels of academic achievement.

The educational literature is replete with correlations which suggest the returns accruing from various investments. For example, the higher the expenditure per student, or the larger the school library, the larger the proportion of students who will attend college. While this is an eminently reasonable supposition on its face, the association is quite possibly spurious. Investments are higher in metropolitan areas and in middle-class suburbs where strong expectations for college matriculation are prevalent.

A massive study has recently been completed by the U. S. Office of Education[28] based upon a national probability sample of over half a million students in three thousand schools. This study is particularly remarkable for the number of school characteristics and practices which were not found to have any appreciable effect upon the achievement of students when controlling for selected personal background characteristics of students.

Table 4

Mean eighth Differential Aptitude Test percentile scores in verbal ability by race and father's occupation; Richmond secondary school students, 1965*

Source of Variation	Number of Cases		Mean
	Sample	Population	
Race			
Negro	1,723	3,211	25.5
White	2,031	11,830	56.6
Father's Occupation			
Professional & Managerial	504	2,652	68.2
White Collar	902	3,977	53.6
Semi and Skilled Labor	958	4,290	49.9
Unskilled and Unemployed	1,271	4,070	35.7
Total	3,966	16,202	49.5

*Unpublished survey data.

The following list of school practices and characteristics had a combined effect accounting for only about 1% of the variation in achievement of sixth and ninth grade Negro and white students; 2% of variation of achievement of twelfth grade white students, and 3% of the variation in achievement of twelfth grade Negro students:

Per pupil instructional expenditures
Number of volumes per student in school library
Presence of science laboratory facilities
Number of extracurricular activities
Presence of accelerated curriculum
Comprehensiveness of the curriculum
Practice in promotion of slow learners
Grouping or tracking practice
Ease of movement between tracks
School size
Number of guidance counsellors
Urbanism of school's location

Other school characteristics which were investigated, but did not show any perceptible relationship to achievement were teacher/pupil ratios, the number of specialized rooms in the plant, the availability of separate classes for special students, and the age of textbooks.

While a survey such as this is not able to assess qualitative distinctions in the way in which the investments, services, and facilities which are provided are actually used in individual schools, the fact that their provision has virtually no effect on measured outcomes is not heartening. It is particularly relevant to the present concern since so many of the special compensatory and enrichment programs which the federal and state government are supporting are based on, or include, elements surveyed in this list without any specialized rationale or assurance of distinction.

Reducing class size, adding guidance counselors, introducing--or abolishing--tracking, creating specialized classrooms, adding extra-curricular activities, and enriching the library are readily administered "projects." Given the resources they can be realized. And since projects develop out of local initiative they may satisfy some "felt need." But the promise for affecting students' intellectual development is slight.

Organizational strategies and material facilities apparently make little difference to educational outcomes. The kinds of people in the school environment of a student have a considerable effect. The principal result, based upon a variety of analyses of the study of school-to-school differences in achievement at different grade levels in the U. S. Office of Education study was summarized by the authors as follows:[30]

"Attributes of other students account for far more variation in the achievement of minority group children than do any attributes of school facilities and slightly more than do attributes of staff."

A recent study in a California community[31] extends this finding. Controlling not only variations in family background, parental supervision, number of siblings, and similar variables, but also allowing for differences in IQ test scores in the primary grades, the social-class characteristics of a students' school-mates make a substantial difference to his subsequent academic development. Significantly it is the social-class composition--not the racial composition--which makes the difference. Segregated Negro schools are always, of course, predominantly lower-class. But, lower-class all-white schools have similar adverse effects, while variations in the racial composition of schools having similar social-class composition have no perceptible effect. A clear policy implication of this finding is that designs to redress racial imbalance in schools must take account of the social-class composition of the schools if they are to be expected to affect the relevant educational milieu.

A second relevant finding reported in this research is that it is the social character of the school--not peers in the immediate neighborhood of the individual--who comprise the educationally relevant social environment. This suggests, contrary to many reservations, that alterations of school compositions may be effective even without prior or concommitant demographic changes in residential patterns.

The theoretical implications of the latter finding are perhaps more important than the direct policy implications. Most of the sociological discussion of effects of segregation have stressed the influence of the values of peers in molding individual orientations. The present finding suggests that it is not a direct communication which occurs in casual or recreational contexts, but rather affects through the definition of the school situation. The modal achievement level of students affects the academic standards expected by teachers and students, the pace of instruction, the proportion of class-time devoted to instruction as opposed to behavioral control, and morale.

This brings us to the second substantial school-to-school effect found in the U.S. Office of Education survey: the effect of staff characteristics upon student achievement. Students in schools where teachers have stronger educational backgrounds, and higher levels of verbal achievement themselves, benefit by this exposure. This is especially true of minority group children. (It is generally true that disadvantaged youths are more sensitive to extra-familial environmental influences, while middle-class children are not so strongly affected.)

At the same time it was found in this study, as in many other investigations,[32] that the teachers of disadvantaged youths, on the average, have poorer backgrounds than teachers of more privileged youths. Moreover, a supplementary survey of teachers-in-preparation showed that those future teachers who have the characteristics which disadvantaged youths might benefit from, tend to aspire to middle-class, college-preparatory academic track assignments.

A pattern of lateral occupational mobility obtains among teachers.[33] New inexperienced teachers in disproportionate numbers serve their apprenticeship in lower-class schools or in rural fringe areas. As they acquire experience and prove their competence they seek to move into more privileged communities. Despite programs over the past decade seeking to attract the best teachers to low-income area schools, the prevailing pattern is still that teachers of the poor are generally less well trained and less experienced and less happy with their positions than teachers of the well-to-do.

Even though for many years teacher training institutions have taken a fairly uniform stance on the environmentalistic side of the old nature-nurture controversy, and almost all writers in the blossoming literature on the "culturally deprived" have done so, a firm part of the occupational ideology of practicing teachers is their ability--bolstered by tests--to derive native wit from student performance. These assessments are mirrored back to students. Irwin Katz,[34] for example, describes an experiment by Rosenthal in which teachers were given fictitious information about the intellectual potentialities of children whose measured intelligence was known to the experimenter. At the end of the school year, the IQ's of the children showed changes commensurate with the false information that had previously been given to the teacher.

The research literature on teacher characteristics conducive to "effective teaching" does not in general provide much useful information.[35] The attributes investigated are rarely based upon theoretical expectations, and the criteria for effectiveness typically involve evaluation of performance by professional supervisors. This criterion would lead to a perpetuation of whatever might be generally deemed "good practice;" even if solid relationships were forthcoming, they would provide an inappropriate basis for reform. We do know from the research cited above, however, that there is a negative selection of teachers to low-income schools. And, perhaps more serious, in a depressed milieu, "good" students are defined by behavioral docility more than intellectual performance.

Educational Programs for Disadvantaged Youths

Before discussing individual programs a general caveat is in order. The vast majority of special programs which have been undertaken are not designed or conducted in such a way as to add to our knowledge of how to proceed. Even such well-noted programs as New York City's "Higher Horizons" (Demonstration Guidance Project), which provided well-documented short term gains, have such a diversity of uncontrolled "inputs" that the reasons for its successes are not isolable. A great many programs entailing massive broad-front intervention are "doomed to success" without providing direction for others.

The many projects funded under OEO and ESEA require "evaluation"--but a reading of hundreds of approved projects does not show that they typically require either careful design or even careful documentation of outcomes. The great majority of programs range in quality of assessment from a reported trip to the snow where the teacher found (apparently with surprise) that the children were well-behaved and enjoyed themselves, to, for example, one-to-one reading and homework tutorials using volunteers, reporting attendance data, case vignettes, and perhaps some criterion of achievement gain.

Most of the compensatory, remedial, and other supplementary programs for disadvantaged students have been organized and implemented hastily (often to take advantage of earmarked funds which would expire at an imminent deadline) without sufficient lead time for program development, staff training, or collection of "base line" data. School people and others have relied largely on procedures which are already parts of standard practice, often given new labels in line with the ways the problems are viewed. (For example, providing services to poor students which are available in another part of town or in more favored districts.)

The main assumption of the majority of remedial and compensatory programs, is that the standard school program is basically sound and should remain essentially as it is for the foreseeable future. If this view were true, of course, evaluation could consist of description and documentation of extensions of standard service. But the fact is that there is little firm evidence--and a plethora of opinion--indicating and contra-indicating specific pedagogical techniques. Not only do we have little knowledge about the instructional procedures and arrangements most likely to prevent the failure of disadvantaged students; we do not thoroughly understand why it is that others succeed. We need to know much more than we do about the conditions of success[36]--both those conditions within the control of the schools, and those which are influenced mostly in other parts of the country. Even the best of the "compensatory" and "remedial" programs which have been produced represent largely good guesses and partially tested hypotheses as to what problems are involved and what the optimal solutions might be.

This state of affairs precludes the advancement of a comprehensive monistic prescription of "the ideal program." Rather we shall suggest strategies for increasing our understanding of the dimensions of effective instruction, suggest some priorities and guidelines based upon the foregoing review of social sources of educational disadvantage, and discuss a few of the most promising and relevant programs now operating in California and elsewhere.

Preschool Programs

In light of the overwhelming influence of the family in the development of linguistic and cognitive skills beginning in infancy, some commentary on preschool programs for disadvantaged children is relevant.

These programs are of three main types: (1) summer only programs, as is most typical with OEO sponsored Headstart; (2) school year length programs, as with the recently started A.B. 1331 programs for children of A.F.D.C. families, plus a few Headstart efforts; and (3) year-around Extended Day Care programs, which have been going for more than twenty years, are mostly custodial efforts and include children up to age twelve. All three can be run by either public or private agencies. It is the first two types that will be discussed here, although the third could easily be included in any planning for deliberate compensatory intervention.

The general pattern of both the first two types of programs is most easily described as that of a fairly standard nursery school with emphasis on group participation, social skills, interpersonal support, with the addition of some attention to language and cognitive development in addition to medical, dental, and nutritional care.

Students are usually brought to classrooms in groups of not more than twenty for five half-days per week (sometimes including breakfast or lunch). The staff that works with them includes a head teacher, an assistant teacher, and enough teacher aides (often parents or Job Corps youth) to bring the adult-child ratio to about one to five. Many programs are on double sessions so that the same staff (or at least the same teacher) meets two groups of children per day, leaving less time available for planning or for work with parents in the community.

Parent involvement varies from rather extensive participation in both the children's program and various kinds of related community action projects (e.g., 1965 "Equal Start" in Berkeley; Tic Toc Nursery in N. Richmond) to almost exclusive emphasis on the children in the classroom, sometimes coupled with minimal home visiting by teachers or neighborhood workers, or work in parent classes.

Staffs for preschool programs are recruited from a limited reservoir of women who have had some experience in nursery or elementary teaching (or coop nursery experience) and from local area residents who may serve as assistant teachers, aides, neighborhood workers, food preparers, etc.

The extent of staff training (and experience) varies widely. OEO sponsors both five-day and eight-week training programs in which it pays selected staff members to participate. Training for A.B. 1331 programs is left up to the sponsoring agency and usually takes the form of a limited amount of in-service training through staff meetings and on-the-job supervision. By and large this means that staff members do what they already best know how to do...which may or may not be relevant to compensatory instruction.

Headstart lists as its major instructional goals independence from home plus ability to get help from other adults, increased ability to live with others and to respect their rights, up-graded self-concept and estimate of self as learner, opportunities to succeed in school settings, development of language skills, enhanced curiosity, increased motor skills, creative expression, and better self-discipline including the channeling of aggression through socially acceptable means. (All typical "kindergarten readiness" goals with only one, perhaps two having direct bearing on compensatory interventions.)

A.B. 1331 gives as its aims a program to put children of low-income families in an "atmosphere of learning" in order to "improve their performance and increase their motivation and productivity when they enter school." The specifics of the program are left largely to be generated in the process of negotiating a contract between the State Department of Education and the local sponsoring agency.

The main problems with preschool compensatory education efforts center around the issue of deficiency (that is, real educational "disadvantage") vs. mere difference (i.e., at variance with "mainstream" middle class culture), and around the question of how to provide the kinds of interventions that may turn out to be important to overcoming deficiencies.

Even in the absence of needed long-range research, however, it seems clear that current efforts are far from adequate. Indeed, it even seems unprofessional to mislead the public into believing that such programs will (or can) clear up the problem of educational disadvantage--as Headstart does by direct promise and A.B. 1331 does by strong implication. We need to be much more modest in our claims--and to devote many resources to careful development activities as we go.

The most consistent positive statement that can be made about Headstart and other similar programs is that they seem to succeed in better preparing low SES children better to cope with the business of functioning easily in a school classroom setting. Children who have attended such programs turn out to be more vocal, more independent and sure of themselves than those who have not. Experience to date, however, has shown that any achievement advantages gained seem to disappear in the first year or two.[37] And, ironically, many kindergarten teachers have been known to complain that preschool graduates are too independent and harder for the teacher to fit into the well-controlled format of the usual kindergarten day.

There are also undoubtedly a goodly number of children who are enormously aided by the preschool programs which they attend, just as there are many children who come from slum homes who do not fail in school (See Davidson & Greenberg, 1962, and Mackler, 1965).

Beyond this, there are some real weaknesses in the present programs. The most important of those can be summarized as follows:

1. By depending largely on previous training and experience of staff, and thus not going in any depth or with any consistency beyond good standard nursery school practice, compensatory preschool programs offer a "shotgun" approach where a rifle with a telescopic sight is clearly indicated. It is not attention to the "total" development of the "whole" child in a well-rounded program which is needed, but a program that puts emphasis on those particular aspects of development that can be identified as schooling-relevant deficiences. The most crucial areas of deficiency appear to be not in the area of the total amount of experience (as many enrichment programs assume), or even in perceptual development as such, but in cognitive development and in those aspects of language functioning that are most closely related. It is the interpretation of experience which leads to the building of necessary cognitive structures, and language is the main medium through which both thought and the instructional

process are mediated. Deficiencies in perceptual skills, motor-manipulative ability (except where related to cognitive operations), and the use of non-standard English are less relevant to educational disadvantage.

2. Teachers who are asked to be generalists, in that they are expected to deal with all aspects of child development and learning, will tend to emphasize the areas of instruction in which they have the most training and experience. Even the best-rated nursery school teachers are usually inadequately prepared to provide real compensatory instruction without a good deal of outside help. Thus, although some teachers may already practice many of the interventions that are particularly appropriate for disadvantaged children, it is safe to say that such practice is neither sufficiently widespread nor applied consistently enough to be representative of common preschool practice. This is particularly true when a high percentage of local adults are hired as aides and assistant teachers.

3. The involvement of parents and other adults in the community is also spotty and inconsistent. Since it is a part of the larger Anti-poverty Program, programs under Headstart have been more often related to wider community efforts than the A. B. 1331 programs. Although participation in community action programs can have a salutory effect on both adults and children, it does not necessarily lead to the upgrading of home settings for the enhancement of intellectual development or school achievement. For diffusion of truly compensatory measures to home settings, parent participation should be more specifically focused on relevant aspects of child rearing.

4. Most of the compensatory preschool programs include mainly, if not exclusively, the children of the poor. In addition to what might be gained from the point of view of integration and intergroup understanding, the presence of more "advantaged" middle classmates can add much to a classroom environment for cognitive and language development, since the specific "teaching of lessons" seems to be less important in many cases than the presence of "models." Beyond this, the (over) stress on the "changing of the lower class to fit the middle class image" seems to be full of a number of traps that are analogous to seeing the civil rights movement as one to help the Negro gain his constitutional rights rather than as an effort to promote a new birth of freedom for all Americans.

Some Alternatives

There are a number of programs in operation in various parts of the country which could serve as models for ways of eliminating the weaknesses of the large majority of present day preschool compensatory efforts. All of these programs are accompanied by careful research.

1. Academically-Oriented Preschool[38]--This is a program which consists of intensive 15-25 minute training sessions three times a morning for three months. Training interventions were derived on the basis of a systematic analysis of the formal characteristics of the language used by the children (Englemann Cognitive Maturity Test and I. T. P. A.). The three sessions, with rest and recreation intervening, focus on structural and language training (repetition of verbal statements, location of concepts concretely, and production of verbal statements), the teaching of arithmetic through language operations (using mathematical statements), and the teaching of reading as a logical process (aiding Ss in the search for rules for decoding print.) This

project has the sharpest focus of all those described and reports short term gains of 9-15 months on various measures used (incl. I. T. P. A.). The children are still being followed up (now in grade 2 or 3), and should the early gains hold up and result in sharply increased academic performance as late as grade six, this may turn out to be a demonstration of the possibility of truly compensating for early training deficiencies in a relatively short period of time with intensive interventions.

2. Early Training Project[39]--This program takes in children one or two years before they enter first grade (there are no local kindergartens). Classroom instruction takes place five mornings a week for ten weeks during the summer and is followed up for the entire school year following with regular weekly home visits by a family worker for the purpose of upgrading the parent ability to provide relevant instruction. The summer program is under the direction of two psychologists from George Peabody College for Teachers and is staffed by a head teacher and five graduate student group leaders for each group of twenty children. Interventions center around two main classes of variables--attitudes toward achievement and aptitudes for achievement. The children rotate each day, five to a group leader, through a series of activities focusing on motivation, success, reinforcement, and delay of gratification; language, cognitive and perceptual development. Evaluation, planning (and in-service staff training) sessions are held daily under the direction of the psychologists. Evaluation of the program is underway through an experimental research design.

3. Perry Preschool Project[40]--This is a two-year program with children coming to cognitively oriented morning sessions and teachers visiting their homes in the afternoons to involve the mothers regularly in the educative process. The morning program consists of "structured group teaching" that appears to be very similar to the Klaus-Gray program and "organized area teaching" where cognitive-language instruction accompanies freely chosen activities in various areas of the room (e.g. store or family corner). The single most effective approach has been labeled "verbal bombardment" where the teacher maintains a steady stream of questions and comments to draw the child's attention to aspects of his environment. This program is also being researched longitudinally.

4. Child Study Center Experimental Program[41]--This was a ten-week experimental comparison of three fairly distinctive programs of preschool intervention during the summer prior to kindergarten: (1) Montessori-like emphasis on arts and crafts tasks of increasing complexity and difficulty, basically a standard nursery program with focus on building success image; (2) Piaget-derived program with regular practice under guidance of small-group leaders on such operations as classification, seriation and seeing reversibility, like Bereiter program but with Piaget orientation; and (3) Parent-Cooperative nursery with highly trained head teacher stressing individual attention to emerging needs of children--more like Ypsilanti parent-training focus. All three had elements of continual evaluation and planning sessions within the separate staffs...like Klaus-Gray.

   Two elements of this program are worth special mention. The groups of children were integrated, consisting of half middle-class white students and half lower-class (mostly Negro) students selected from the Berkeley Headstart population. The parent cooperative pattern has been adopted this year as the way of implementing the A.B. 1331 effort, although more intensive staff (and parent) training efforts are planned than took place during the summer.

5. **New York Experimental Pre-school[42]--Like the Peabody School this program covers a broader spectrum of activities and experience than the Bereiter program, though the emphasis is still on cognitive development. The program is being carefully researched. Deutsch is presently preparing a book dealing specifically with his program.**

Recommendations and Guidelines

From the analysis presented in this paper several general guidelines for developing educational programs for socially disadvantaged youths seem clear. Let us list them briefly and then elaborate.

1. Investments into compensatory education should be designed to provide increments to our understanding of instruction and learning, and the diffusion of validated information.

2. The importance of the development of language as a tool of thought, its development through parent-child interaction during infancy and pre-school years, and the adverse effects on self-image, expectations, and motivation consequent on failure, dictate a central focus upon early childhood cognitive training and work with parents or future-parents.

3. The socio-cultural characteristics of a school have stronger demonstrable causal effects upon the intellectual development of students than do material facilities or the organization or provision of specialized services. These variations are linked to the social-class composition of the student clientele--not racial balance per se. Disadvantaged children are more sensitive to the extra-familial milieu than privileged children. These considerations underscore the importance of social integration of schools in order to attain equal educational opportunity.

One of the most difficult problems faced by those who would bring about changes in educational programs stems from the combined forces of tradition and the day-to-day, year-to-year necessity for maintaining such programs in operation. Virtually all people of school age and older have been involved in school programs as they now are, and while needed research and development are carried out, school must keep. In the face of this, what is required is the deliberate development of rather potent strategies for effecting social change both within public school establishments and in the wider community setting. The cost of devising and carrying out such strategies must be reckoned as part of the cost of public education.

One general approach to meeting this problem is to link local school districts with other agencies such as universities, colleges, regional laboratories, and/or research and development centers in long-term, well-supported cooperative development, research and staff training programs. The rationale for this kind of arrangement is as follows.

A school system's function is to provide on-going programs of educational services to children and their parents. Such programs not only serve a population, but can provide laboratory settings for developing different kinds of services and for training professional workers. However, because of the nature of its political and economic relationship to a local community, it is difficult for a school system itself to carry on rigorous evaluation of its programs. It is also difficult for school personnel to rethink practices because they are deeply involved in maintaining what exists in operation. This makes schools very dependent upon "packaged" programs from publishers, curriculum projects, and other outside sources. The typical result is piecemeal (i.e., for only two or three grade levels), unarticulated innovations that are not adequately tailored to local needs (characteristics of children, etc.), not built into adequate teacher preparation programs, and (probably) not significantly different from what was replaced. Above all, there is usually not sufficient attention to bringing about real changes in the substance of the teaching-learning interactions in the classroom.

A university, on the other hand, may contain a number of departments (or an R&D center with different divisions) possessing both competence and interest in development and research activities relevant to educational programs. Such departments are often in a position to do the kind of short-term and longitudinal research which is needed not only for the evaluation of particular programs, but which could add to our basic knowledge about education. What is usually lacking are populations of children (and teachers) in field situations with which to carry on this research, so that the findings might eventually be more widely applicable. Even research and development in laboratory or "campus" schools have been found to be very limited.

Continuing cooperative arrangements between universities and school systems--either directly or through regional centers--could be very fruitful. Working with an agency which is in a position to study the whole community rather than confine its attention to the school population, could permit the exploration of variables and relationships that heretofore have not been viewed together within a common framework of interest in instructional services. Since the university or college is also the main agency for teacher education (both in schools or departments of education and in other departments), such programs could respond much more quickly to the demands of program changes in the school, and help produce change where it is most essential--in the teacher.

Curriculum Development and Training Centers

An organizational model for this long-range cooperative effort could be called a Curriculum Development and Training Center. Such a center would be located in a school district and would include components from a nearby university, state college, or regional laboratory. The Center could be conceived of as an "educational park" or "educational complex," but should in any case encompass a full range of educational levels--pre-kindergarten up through at least high school, and some aspects of teacher education. Also directly related should be a number of community agencies in addition to the schools. Each Center would have to have delegated to it by both the local school authorities and the state, a substantial degree of autonomy in the making of fiscal and other policy decisions, and receive enough financial support to be able truly to strike out in new and promising directions. In the related institution for higher education, or regional laboratory, there should be scholars from a number of disciplines in addition to education and psychology working in and for the Center.

Basic support for such a center should include funds, not linked to program, to attract outstanding research scholars and finance basic data collection and analysis for research over and above administrative and record-keeping data processing requirements.

The current major sources of program support and stimulation--the OEO and ESEA Title I provision (PL 89-10)--are not only conducive to piecemeal, hasty, program development without adequate research controls; their provisions for eligibility which call for documentation that the program will primarily serve the poor are inherently antithetical to school integration. Although administrators of the provisions of these bills, of course, favor school integration, in the face of community recalcitrance, apathy, or uncertainty, they can do little beyond serving in a consultative role where local community conflict calls for adjudication and diplomacy.

The federal and state legislative enactments should encourage the development of integrated educational parks linked to research and development programs. These educational complexes must have the talent and resources to provide better educational services which the public demands than are available in segregated or private schools.

Footnotes

[1] Contrast, for example, the nuances of titles to earlier tracts on this topic: Leonard P. Ayers, Laggards in Our Schools (New York: Russell Sage Charities Publication Committee, 1909); William H. Dooley, The Education of the Ne'er-Do-Well (Boston: Houghton Mifflin Company, 1916).

[2] Ayers, op. cit., p. 107.

[3] Otto Klineberg, "A Science of National Character," Journal of Social Psychology, XIX (1944), 147-62.

[4] See, e.g., David P. Ausubel and Pearl Ausubel, "Ego Development among Segregated Negro Children," in A. Harry Passow, ed., Education in Depressed Areas (New York: Teachers' College, Columbia University, 1963), pp. 109-41.

[5] Good reviews of current thinking on this topic are found in G. A. Ferguson, "On Learning and Human Ability," Canadian Journal of Psychology, VIII (1954), 95-112; J. McV. Hunt, Intelligence and Experience (New York: Ronald Press, 1961).

[6] See, e.g., S. A. Kirk, Early Education of the Mentally Retarded (Urbana: University of Illinois Press, 1958); Ernest A. Haggard, "Social Status and Intelligence," Genetic Psychology Monographs, XLIX (1954), 141-86; UNESCO, Courier, III, No. 6-7 (1950); H. B. Boger, "An Experimental Study of Perceptual Training on Group IQ Scores of Elementary Pupils in Ungraded Schools," Journal of Educational Research, XLVI (1952), 43-53; Burton Blatt, Educating Intelligence (New York: John Wiley & Sons, 1965)

[7] Otto Klineberg, Negro Intelligence and Selective Migration (New York: Columbia University Press, 1955); Martin Deutsch and Bert Brown, "Social Influences in Negro-White Intelligence Differences," The Journal of Social Issues, XX (1964), 24-35; Kenneth Eells, et al., Intelligence and Cultural Differences (Chicago: University of Chicago Press, 1951).

[8] Martin Trow applies this contrast between liberal and radical views of opportunity to a discussion of the education of the gifted and of the disadvantaged in "Two Problems in American Education," in Howard S. Becker, ed., Social Problems (New York: John Wiley & Sons, 1966). See, also, Merle Curti, The Social Ideas Of American Educators (Paterson, N.J.: Littlefield, Adams & Co., 1961); Lawrence A. Cremin, The Transformation of the School (New York: Vintage Books, 1961), and The Genius of American Education (New York: Vintage Books, 1965); Rush Welter, Popular Education and Democratic Thought in America (New York: Columbia University Press, 1962).

[9] While there is evidence that environmental variations have relatively little effect upon the intellectual development of privileged children, the multiple determination of cognitive growth leads to an infinite gradation. Drawing a sharp cutting-point and saying certain persons below that point are "disadvantaged" is arbitrary--like counting the "poor." Havighurst's suggestion of fifteen per cent of the child population--estimated from the proportion of unemployed, out-of-school youths--seems reasonable if a suggestive figure is needed. See Robert J. Havighurst, "Who Are the Socially Disadvantaged?" in Staten W. Webster, ed., The Disadvantaged Learner (San Francisco: Chandler Publishing Company, 1966), pp. 20-29.

[10] Some of the major connections will be spelled out in subsequent sections of this report.

[11] C. Burt and Margaret Howard, "The Multifactorial Theory of Inheritance and Its Application to Intelligence," *British Journal of Statistical Psychology*, IX (1956), 95-131; Leona E. Tyler, *The Psychology of Human Differences* (New York: Appleton-Century-Crofts, 1965).

[12] N. R. Ellis, ed., *Handbook of Mental Deficiency* (New York: McGraw-Hill Book Company, 1963).

[13] Sonia F. Osler and R. E. Cooke, *The Biosocial Basis of Mental Retardation* (Baltimore: The Johns Hopkins Press, 1965).

[14] E.g., A. R. Jensen, "Rote Learning in Retarded Adults and Normal Children," *American Journal of Mental Deficiency*, LXIX (1965), 828-34.

[15] A. R. Jensen, "Learning Abilities in Mexican-American and Anglo-American Children," *California Journal of Educational Research*, XII (1961), 147-59, "Learning Abilities in Retarded, Average, and Gifted Children," *Merrill-Palmer Quarterly*, IX (1963), 123-40, reprinted in John P. DeCecco, ed., *Educational Technology: Readings in Programmed Instruction* (New York: Holt, Rinehart and Winston, 1964); Jacqueline L. Rapier, "The Learning Abilities of Normal and Retarded Children as a Function of Social Class" (unpublished doctoral dissertation, University of California, 1966).

[16] *Ibid.*

[17] F. C. J. McGurk, "A Scientist's Report on Race Differences," *U. S. News & World Report* (September 21, 1956), reprinted in H. H. Humphrey, ed., *School Desegregation: Documents and Commentaries* (New York: Thomas Y. Crowell, 1964); Leona E. Tyler, *op. cit.*

[18] Cited in B. Bloom, *Stability and Change in Human Characteristics* (New York: John Wiley & Sons, 1964), pp. 78-79.

[19] Jensen, A. R., "Social Class and Perceptual Learning," *Mental Hygiene*, 1966, 50, 226-239.

[20] Frost, J. L. and Hawkes, G. R., *The Disadvantaged Child* (New York: Houghton Mifflin Company, 1966), p. 46.

[21] Bernstein, B., "Social Structure, Language and Learning," *Educational Research*, 1961 *3*, 163-176.

[22] Hess, R. D., Shipman, V. "Early Blocks to Children's Learning," *Children*, 1965, *12*, 189-194.

[23] Jensen, A. R., "Verbal Mediation and Educational Potential," *Psychology in the Schools*, 1966, *3*, 99-109.

[24] Jensen, A. R., *Social Class and Verbal Learning*. In M. Deutsch, A. R. Jensen & I. Katz (Eds.) *Social Class, Race, and Psychological Development*, (New York: Holt, Rinehart, & Winston, in press).

[25] Entwisle, Doris R., *Word Associations of Young Children*, (Baltimore: The Johns Hopkins Press, 1966).

[26] The most comprehensive recent survey of achievement is that conducted by the U. S. Office of Education in 1966. See James S. Coleman, et al., Equality of Educational Opportunity (Washington, U. S. Govt. PO, 1966), pp. 220-75, and Supplemental Appendix to the Survey on Equality of Educational Opportunity, passim.

[27] If adjustments were made for school drop-outs the spread would become even greater from the 9th through 12th grade.

[28] Coleman, op. cit.

[29] Ibid., pp. 313-15. It is noted on pp. 529-45 that guidance counselors apparently created a better "fit" between students' achievement and college aspirations.

[30] Ibid., p. 302. See also, Alan B. Wilson, "Residential Segregation of Social Classes and Aspirations of High School Boys," American Sociological Review, XXXIV (December 1959), 836-45, and "Social Stratification and Academic Achievement," in Passow, ed., op. cit., pp. 217-35; John A. Michaels, "High School Climates and Plans for Entering College," Public Opinion Quarterly, XX (1961), 585-95; Ernest I. Campbell and C. Norman Alexander, "Structural Effects and Interpersonal Relationships," American Journal of Sociology, LXX, (November 1965), 284-89; William H. Sewell and J. Michael Armer, "Neighborhood Context and College Plans," American Sociological Review, XXXI (April, 1966), 159-68; Richard P. Boyle, "The Effect of the High School on Students Aspirations," American Journal of Sociology, LXXI (May 1966), 628-39; Ralph H. Turner, The Social Context of Ambition (San Francisco: Chandler Publishing Company, 1964); Sarane S. Babcock, "Toward A Sociology of Learning: A Selective Review of Existing Research," Sociology of Education, XXXIX (Winter, 1966), 1-45.

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APPENDIX M

TEACHER SUPPLY AND DEMAND IN CALIFORNIA

by

Werner Z. Hirsch

University of California, Los Angeles

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APPENDIX M

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APPENDIX M

TEACHER SUPPLY AND DEMAND IN CALIFORNIA

Werner Z. Hirsch*

I. Introduction

On October 31, 1965, there were about 154,000 full-time teachers employed in California's schools, aided by perhaps an additional 15,000 part-time teachers. By most standards this number was insufficient to do an adequate job of teaching California's youngsters.

This in itself would justify an inquiry into the teacher supply and demand in California. But in addition, the very rapid influx of people into the State, and the great strides now being made in devising new educational technologies, make this an especially propitious time to start working towards a better understanding of the problem as it relates to the future. As we gain insight into the implications of possible future events affecting teacher supply and demand we can formulate better plans and mitigate possible future strains and stresses.

This paper is preliminary in many respects, since the time for its preparation was limited. Promising frameworks of analysis are investigated, and certain suggested approaches to inquiry are formulated. Some of the most relevant data currently obtainable is produced, but only limited new data could be collected. The paper mainly points to a number of possible remedial steps that deserve to be further investigated before implementation can be considered.

First we examine the supply of teachers and its determinants; then turn to the demand side. By bringing the supply and demand together, an inquiry into teacher shortages in California follows. After examining the past and present, an effort is made to look into the future and finally, steps are proposed that could bring supply of, and demand for, teachers into greater harmony in years to come.

II. Supply and Its Determinants

Some Theoretical Considerations

An inquiry into the supply of teachers can proceed along lines similar to those that would be pursued if the supply of physicians, registered nurses, or lawyers were to be studied. The similarity stems from the fact that in all these cases clearly defined, and often rigid, qualifications must be met before the candidate is accepted into the profession. In the case of teachers in California schools the award of a teaching credential qualifies the candidate to teach.

Little purpose is served in merely looking at the supply of teachers in California as an aggregate. Instead, we propose that there are at least five groups from which a teacher may be drawn at the beginning of a school year. There are the credentialled teachers who return after teaching the previous year, new California-trained credentialled teachers, credentialled teachers returning after absence, teachers who migrate into California with permanent California credentials, and teachers with provisional credentials.

*I would like to express my appreciation to Lyda Boyer, Eugene Devine, Margery Lazar and Morton Marcus for criticism and help.

Greater insight can be gained by understanding the relative importance of these five supply groups as well as the factors determining the size of each. While much research on such factors remains to be done, I would like to offer some hypotheses that appear to make some sense and lend themselves to empirical tests.

Hypothesis 1: The number of returning credentialled teachers is related to the number of teachers teaching in California during the previous year, number of retirements and deaths in this group, teachers' salaries in California, teachers' salaries in other states, and alternative pursuits to teaching.

Hypothesis 2: The number of new California-trained credentialled teachers is related to the number of credential candidates from the previous year, their appointment acceptance rate, teachers' salaries in California, teachers' salaries in other states, and alternative pursuits to teaching.

Hypothesis 3: The number of returning credentialled teachers after absence is related to the number of credentialled teachers not teaching, their age and sex, teachers' salaries in California, teachers' salaries in other states, and alternative pursuits to teaching.

Hypothesis 4: The number of teachers who migrated to California with permanent California teaching credentials is related to the number of immigrants to California during a given year, teachers' salaries in California, teachers' salaries in other states, and alternative pursuits to teaching.

Hypothesis 5: The number of teachers with provisional credentials is related to the number of persons considered to meet minimum teaching qualifications, ease with which they can obtain provisional credentials, teachers' salaries in California, teachers' salaries in other states, and alternative pursuits to teaching.

It appears that much can be gained from testing, and if necessary modifying, these hypotheses and quantifying them. The results can be used not only to give us a better understanding of past relationships but also to help us make projections of future needs under specified conditions, and to propose steps designed to foster supply increases.

Past and Present Profiles of California Teachers

Of the 154,196 full-time teachers employed in California on October 31, 1965, 92,914 were in elementary schools and 61,282 in secondary schools. (See Table 1.) As expected, this represents a steady increase in the number of teachers for the past several years, as can be seen from Table 1. In addition to these full-time teachers an approximate additional 10 percent of the total number were employed as part-time teachers.

In recent years about 91.7 percent of last year's teachers returned to teach the following year. Of the 8.3 percent who did not return to a teaching position in California during the years 1957-1962, 4 percent resigned, 2.1 percent had leaves of absence, 1 percent retired, 0.6 percent were dismissed, 0.5 percent transferred into non-teaching assignments and 1 percent passed away.[1]

Turning to new California-trained teachers, about 12,300 credentials candidates graduated in 1964-65, but the figure is estimated to have declined to 10,800 in 1965-66.[2] Obviously not all of these newly trained teachers accepted appointments in California; the estimate is that only about 80 percent of them did so.[3]

Table 1

Number of Elementary and Secondary School Teachers in California

	Total Full-time Teachers	Elementary School Teachers	Secondary School Teachers
1960-1	117,500	73,412	44,088
1961-2	123,522	76,879	46,643
1962-3	131,429	80,890	50,539
1963-4	139,128	84,702	54,426
1964-5	147,494	88,982	58,512
October 31, 1965	154,196	92,914	61,282

Source: Blair E. Hurd, *op. cit.*, p. 14, and files of the State Department of Education for October 31, 1965.

Candidates obtain their credentials in a wide variety of school subjects. For example, in September, 1965, 1,050 credentials candidates specialized in the social sciences, 825 in English but only 161 in business education, etc. (See Table 3.)

Where are teachers trained in California? The most recent data we could find are for the academic year 1958-59.[4] In that year the state colleges supplied about 56 percent of all credentials candidates, private universities and colleges 23 percent, and the University of California 21 percent. There was a distinct change in the relative importance of these three groups as suppliers of teachers early in the 1950's, and this trend has probably more or less continued since then. As can be seen from Table 2 the importance of state colleges for teacher training has distinctly increased while that of private colleges and universities has greatly declined. The role of the University of California in supplying teachers declined from providing the credentials of 26 percent of all candidates in 1951, to 21 percent in 1958.

As expected, the state colleges played an especially important role in training elementary teachers. In 1959 they accounted for 62 percent of all primary teachers trained, while private institutions accounted for 21 percent and the University of California for only 17 percent. On the other hand, in the same year, the state colleges trained only 52 percent of secondary school teachers, the University of California 29 percent and private institutions 19 percent.

We know very little about the characteristics of teachers returning after absence. They were estimated in 1964-65 to amount to about 2,800 out of a total of about 147,500 teaching in California. This would be a mere 2 percent.

We know even less about teachers who immigrate to California and obtain a permanent credential here. Records of the California Certification Office show, however, that in 1962-63 15,019 out of 35,159 credentials were issued to persons who were trained out-of-state. This amounted to 43 percent, a figure which also prevailed two years later.[5]

Furthermore, a recent survey of 32 select districts (employing 27 percent of California's elementary teachers, and 41 percent of its secondary teachers) by the State Department of Education, revealed that 40 percent of the elementary and secondary teachers recruited for the 1965-66 school year had been recruited from out-of-state.[6]

Finally, we turn to teachers with provisional credentials; in 1964-65, 5 to 6 percent of the total teaching force came from this group.[7]

III. Demand and Its Determinants

Some Theoretical Considerations

The demand for teachers is basically a derived demand. It is derived from the overall demand for education. Public education is offered at virtually zero price; we cannot estimate a conventional demand function, instead we operate at one point of the demand curve. This must be remembered when considering the demand for teachers in California.

For practical purposes, the demand determinants for teachers can be grouped into four major categories: the number of school age youngsters, the average number of years each spends in school, the nature of the curriculum, and the general teaching procedures used in the schools. We will next consider the last three determinants separately, since there is little that needs to be said here about how the number of school age youngsters changes. Especially since little can be done about it by school or other officials.

Table 2

Percent of California Credentials Candidates
(Including Those for Administrative Credentials)
Supplied by Each Type of Institution, 1951-1958

	State Colleges	Private Colleges and Universities	University of California
1951	40.50	33.66	25.84
1952	42.38	31.54	26.08
1953	46.10	31.06	22.84
1954	50.16	26.25	23.59
1955	56.49	18.85	24.66
1956	56.47	24.04	19.49
1957	55.62	21.81	22.57
1958	55.68	22.88	21.44

Source: Carl A. Larson, Bulletin of the California State Department of Education, Sacramento, Vol. XXIX, No. 1 (January 1960) p. 26.

The average number of years that a youngster stays in primary and secondary schools is partly determined by state law, which stipulates mandatory school attendance up to a given age. Thus, most of the variation results from dropouts during senior high school years. In recent years, the nation has become greatly concerned about a high dropout rate and has taken a variety of steps designed to reduce it; further efforts in this direction can be expected.

The effect the curriculum has on the demand for teachers is related to the fact that certain types of courses make greater demands on teachers than others. Specifically, vocational training and driver training can only be offered in very small classes because of the individual attention required by each student. Social studies or business education, however, can be taught effectively in larger classes.

Teaching methods also affect the demand for teachers. Various technological devices have been developed that can improve education while increasing the student-teacher ratio; they include programmed learning and teaching machines, teaching by television, etc. In addition, much of today's senior high school education relies on spoon feeding; many able senior high school students could greatly benefit from spending less of their school day in organized classes and more of it in the library where they can teach themselves through independent reading and thus reduce the teaching load. Also, there might be room for a better division of labor, assigning more tasks to teacher aids. And, finally, the length of the school year might be reconsidered, changing the demand for teachers in several possible ways.

Past and Present Demand

Developing a useful method to estimate today's and yesterday's demand for teachers in California is not a simple task. While methods will be explored in section IV, here we will merely present some data for 1965-66.

Based on the number of youngsters seeking education in California and prevailing dropout rates, the current curriculum and teaching procedures culminate in a pupil-teacher ratio of 29.6:1 for primary schools and 24.5:1 for secondary schools and the following teacher demand emerges:

1965-66 elementary teacher demand was estimated to be 94,090 of which 4,960 were needed for special education and

1965-66 secondary school teachers demand was estimated to be 60,280 of which 1,650 were needed for special education.

1965-66 total teacher demand in California therefore was estimated to be 154,370.[8]

It is most difficult to get careful estimates of the demand for teachers in separate school districts or counties. Likewise, it is difficult to get estimates of the demand for teachers by subject matter. More will be said about these two dimensions of the problem in the next section.

IV. Shortages

The Shortage Concept

While we can usually find references to a shortage of scientists, engineers, teachers and a variety of other skills, closer examination reveals that we are on slippery grounds.

Let us examine some of the issues surrounding the shortage concept. If knowledge were perfect and adjustments timeless, demand and supply would be in balance at a market clearing price. But in fact these assumptions are never met.

The demand for education is complicated by the fact that it tends to be offered below market price; in the case of public education, it is offered at virtually zero price. The conclusion that a teacher shortage exists, and the magnitude of the shortage, often are highly subjective. Under many circumstances, in the eyes of parents, school boards, or society there are not enough teachers to offer the kind or quality of education deemed desirable. What is thought to be desirable, is obviously based on highly subjective value judgements.

We would like to suggest two shortage concepts that might shed light on imbalances between teacher supply and demand as conceived in our present school system: dynamic shortages, and salary or wage control shortages.

Dynamic shortages are the result of bottlenecks that arise when insufficient or improper foresight produces too few teachers to meet the demand at a given moment of time. For example, a new federal program may result in a large increase in the school population. If the increase were not estimated correctly, or if it were foreseen but enough teachers were not trained to handle the increased teaching load, we would be likely to find supply falling short of demand at a given moment of time.

Salary or wage control shortages result in unfilled vacancies because of obstacles that prevent salaries from rising to the equilibrium level. These obstacles can be legal or quasi-legal salary controls. For example, in the case of secondary school teachers, a single salary schedule (the same salary schedule for all teachers) can produce effects similar to those of legal wage controls for teachers with certain types of training. A single salary schedule can prevent schools from paying differential salaries for teaching on different grade levels, different subject matters, and at different locations within the state, county or school district. Thus teacher shortages are best analyzed in terms of these two categories, before shortage figures are added into an aggregate. In practical terms, teacher shortages are best measured by the number of funded positions which are vacant. Although such data are hard to come by, we present the best data we could find in the following section.

Some Estimates of Teacher Shortages in California

The State Department of Education estimated that in 1965-66 the State of California had a demand for 154,370 teachers, 19,590 of them new.[9] The demand for new teachers resulted from a growth in student population and from the fact that about 8 percent of the previous year's teachers did not return.

It was estimated that the new crop of credential candidates graduating from California institutions in 1965 amounted to 12,153, and of these, about 9,720 would accept appointments in California schools. Approximately 2,850 more teachers would return after an absence, giving a total of 12,570 new teachers for that year. Compared with the new teacher demand figure of 19,590, this left a shortage of 7,020 teachers.[10] Most of this shortage was met by recruiting teachers from other states and hiring others on a provisional credential basis.

Where is the teacher shortage most acute? We do not have estimates of teacher shortages by school districts or counties, but there is reason to expect a high correlation between teacher shortages and the number of emergency provisional credentials holders in a county or school district. Out of the State's 58 counties, in 1964-65, only 10 engaged less than one percent teachers holding emergency provisional credentials.

These were Alpine, El Dorado, Nevada, Plumas, San Diego, San Francisco, Alameda, Orange, Sacramento, and Santa Clara Counties. Twenty-eight other counties had more than one percent of their teachers holding emergency provisional credentials, these were mainly rural counties with small school populations, except for Fresno and Tulare Counties. In Sierra County about 8 1/2 percent of all teachers held emergency provisional credentials (about 12 percent of its elementary school teachers and 5 1/2 percent of its high school teachers).[11]

There is even some tentative information on possible teacher shortages in primary vs. secondary schools on a county basis: there were no elementary school teachers holding emergency provisional credentials in 13 counties, and no such high school teachers in 19 counties. But there were more counties with large percentages of elementary school teachers holding emergency provisional credentials than of high school teachers. For example, there were 3 counties -- Sierra, Tuolumne and Mono -- with more than 10 percent of their elementary school teachers holding emergency provisional credentials, while the county with the highest percentage of high school teachers with the same credentials was Sierra County with 8 1/2 percent.

It appears that teacher shortages throughout the State are more serious on the elementary level than on the high school level. For example, in 1964-65, the percentage of elementary school teachers holding emergency provisional credentials was about twice that of high school teachers. On the other hand, there is some evidence that the trend of provisional credential holders at the elementary level has been consistently downward while that on the high school level has been consistently upward.[12]

Now let us turn briefly to teacher shortages in certain high school subject areas. Table 3 presents information for 1965 which shows that the greatest shortages, in percentage forms, existed in mathematics, physical education for women, business education, English, homemaking, science, industrial arts, foreign languages, and music, in this order. But there also existed a surplus in certain subjects: art, physical education for men, and social sciences, in that order.

V. Projecting Future Supply, Demand and Shortages

Clearly, a large variety of methods could be used to project the future teacher supply and demand for California. We will discuss a few specific problems related to projecting supply and demand data, and then present some actual projections made by the State Department of Education. Some possible future effects that federal programs and the Fisher Act may have on teacher supply and demand will also be discussed.

Supply and Demand Projections

The key factors affecting the supply of teachers for California schools will probably be the number of trained teachers available, salary level and structure, and teaching credential requirements. These are the variables that have to be projected into the future before the supply of teachers can be estimated.

There are various projection techniques that future research should explore, including the construction of computerized econometric models which, if successful, could be used to continuously update the estimates. However, the search for powerful projection techniques must be tempered by a realistic appraisal of data availability. Our inquiry into the problem has convinced us that much of the required data are not presently collected and, more importantly, are very difficult and expensive to collect. To get such data for past periods is virtually impossible.

Table 3

Shortages of New High School Teachers
by Subject Matter, September, 1965

High School Subject	Number of Credentials Candidates	Estimated Need	Over or Undersupply	Percent
Art	256	210	46	+21.9
Business Education	161	360	-199	-55.3
English	825	1450	-625	-43.1
Foreign Language	296	390	-94	-24.1
Homemaking	189	330	-141	-42.7
Industrial Arts	206	320	-114	-35.6
Mathematics	255	820	-565	-68.9
Music	207	220	-13	-5.9
Physical Education (men)	361	300	61	+20.3
Physical Education (women)	202	510	-308	-60.4
Science	334	550	-216	-39.3
Social Science	1050	970	80	+8.2
Other	688	55	--	--

Source: Blair E. Hurd, op. cit., p. 11.

The key factors affecting the demand for teachers will be the number of students, average number of years each spends in school, the nature of the curriculum and the teaching procedures used in the schools.

Of these factors, projection of the school age population appears to best lend itself to rigorous scientific inquiry. Such an inquiry usually starts with a model facilitating the projection of the total California population in future years. One such model is presented in Attachment I. Once we have projections of population size, the next step is usually to estimate the size of the school age group. Here too, it should be pointed out that the development of powerful analytic techniques cannot be too far ahead of data availability if it is to produce useful results.

Subject to institutional constraints, California schools have freedom to modify their curriculum and change their teaching procedures, including possible mechanization. How they should use this freedom will depend on the future world today's students will face, and also on the amount of funds that will be available to support small teacher-student ratio classes, and to purchase expensive teaching equipment.

Some Actual Projections

Much of the research must yet be done if we are to estimate future teacher supply, demand, and shortages accurately, as indicated in the preceding section. However, the State Department of Education has done some work in this area, and its results are presented here.

First let me point out that the methods employed by the State Department of Education are not inconsistent with those we propose in this paper. Instead, they are abbreviated, and in a number of places steps and relationships are not made explicit. Their methods are briefly summarized below:

They define the demand for teachers in California by measuring the number of teachers necessary to maintain the current pupil-teacher ratios (or slightly reduce them in the case of elementary schools, and slightly increase them in the case of secondary schools). In line with this definition the demand for new teachers is estimated, assuming historical replacement rates, etc.

The "available supply" is defined as consisting of the number of credentialled returning teachers plus the number of newly credentialled California-educated teachers who will accept appointments in California schools.

Table 4 presents 1965-66 to 1974-75 demand estimates for elementary school teachers. According to these estimates, the demand for new teachers will increase from 12, 850 in 1965-66 to about 14, 200 in 1974-75. The number of new elementary school teachers would of course increase further if the pupil-teacher ratio were to decrease. For example, 12, 850 new teachers are required for 1965-66, based on the prevailing pupil-teacher ratio. If this ratio were reduced to 29:1, an additional 4, 610 teachers would be needed; and if it were further reduced to a 27:1 ratio, twice as many additional teachers would be required than for the estimated number for a 30. 5:1 ratio.

Table 5 presents similar projections for secondary school teachers. Here, assuming that the 1965-66 pupil-teacher ratio will increase to 25. 0:1 in 1974-75, the demand for new teachers will increase from 6, 740 to 8, 890.

Next let us turn to their teacher supply projections. In the first column of Table 6 we find estimates of the number of credentials candidates graduating in the previous year from California institutions. This figure is assumed to gradually increase from

Table 4

Projected Demand for Elementary School Teachers in California, 1965-66 to 1974-75

Projected for	Teacher Demand for Regular Classes 1	Teacher Demand for Special Education 2	Total Teacher Demand 3	Demand for New Teachers 4
1965-6	89130	4960	94090	12850
1966-7	91810	6060	97870	12000
1967-8	94620	7090	101710	12400
1968-9	96650	8180	104830	12060
1969-70	98950	9450	108400	12890
1970-1	100830	10700	111530	12790
1971-2	103200	11920	115120	13570
1972-3	105160	13030	118190	13420
1973-4	107720	13950	121670	14120
1974-5	110020	14880	124900	14200

Source: Blair E. Hurd, op. cit., pp. 14 and 18.

Table 5

Projected Demand for Secondary School Teachers in California, 1965-66 to 1974-75

Projected for	Teacher Demand for Regular Classes 1	Teacher Demand for Special Education 2	Total Teacher Demand 3	Demand for New Teachers 4
1965-6	58630	1650	60280	6740
1966-7	60980	2020	63000	7860
1967-8	63360	2360	65720	8100
1968-9	66120	2730	68850	8740
1969-70	68410	3150	71560	8630
1970-1	70800	3570	74370	8970
1971-2	72960	3980	76940	8980
1972-3	75020	4350	79370	9050
1973-4	76750	4650	81400	8890
1974-5	78380	4960	83340	8980

Source: Blair E. Hurd, op. cit., pp. 15 and 18.

Table 6

Projected Increment to the Supply of Teachers in California, 1965-66 to 1974-75

Projected for	Estimated No. of Credentials Candidates Graduating in Previous Year (from California Institutions) 1	Estimated Number of Candidates Who Will Accept Appointment 2	Estimated Number Teachers Returning After Absence 3	Estimated Supply of New and Returning Teachers 4
1965-6	12153	9720	2850	12570
1966-7	12870	10300	2960	13260
1967-8	13900	11120	3060	14180
1968-69	13350	10680	3160	13840
1969-70	14170	11340	3260	14600
1970-1	14900	11920	3350	15270
1971-2	15290	12230	3430	15660
1972-3	16180	12940	3520	16460
1973-4	16520	13220	3600	16820
1974-5	17170	13740	3690	17430

Source: Blair E. Hurd, op. cit., p. 22.

12, 153 in 1965-66 to 17, 170 in 1974-75. The next column indicates how many new credentials candidates will accept appointments in California schools. To this should be added the estimated number of teachers returning after absence, given in column 3. They are then aggregated in column 4 to give us estimates of the available supply of new teachers.

We are now ready to compare the estimated demand for new teachers with the estimated available supply and this is done in Table 7 where the third column indicates the estimated teacher shortage or excess demand. This table indicates a gradual decline in the shortage of teachers from 7, 020 in 1965-66 to 5, 750 in 1974-75. During this ten year period a total shortage in excess of 65, 000 could be expected according to these estimates.

For a number of reasons these projections can be considered tentative, at best. For example, new credential requirements, aimed especially at elementary school teachers, appear to have reduced the number of students completing student teaching since 1963-64. As a result the projected 1965-66 figure in Table 6 (12, 153) is 1, 330 larger than a more recently estimated number. A further reduction in this projection is estimated for 1966-67. (See Table 9.)

Let us return to the projections in Table 7. To the best of my knowledge the State Department of Education does not break these expected shortages down by school districts, level of education, and subject matter. However, we are willing to offer the following conjectures about them:

Unless major new steps are taken, I expect poor rural school districts and counties to continue having major teacher shortages. Likewise urban school districts in core cities with a heavy concentration of minorities are likely to continue to face similar problems. Geographic area appears to contribute to shortages, as do low salaries. Furthermore, I would expect shortages of secondary school teachers to be particularly heavy in subjects where trained men and women are offered lucrative alternative positions outside the schools. While I foresee science and mathematics teachers remaining in short supply, additional demands may develop outside of education for people trained in other subjects as well.

The new requirement that foreign languages be taught in elementary schools will increase the demand for foreign language teachers. Greater national concern for the culturally disadvantaged, and more federal funds appropriated to improve their situation, will increase the demand for additional teachers in English, reading, writing and mathematic skills for that group. The change in credential requirements under the Fisher Act, in conjunction with status and professional considerations, is likely to aggravate the teacher shortage, especially in elementary schools.

Possible Future Effects of Federal Programs

In recent years, the federal government has taken steps that could directly affect the teacher shortage for years to come. We will examine some of the features of federal funding of education programs, reflect on how they might affect the demand for, and supply of, teachers, and offer some tentative estimates for the future.

Among the important federal programs are Public Law 89-10: The Elementary and Secondary Education Act of 1965, the Peace Corps, the Job Corps, the National Teacher Corps, Project Head Start, etc. By far the greatest demand on teachers is made by the Elementary and Secondary Education Act of 1965. This law makes financial aid available to local educational agencies serving areas in which children from low-income families are concentrated.[13] The maximum amount of funds that may be granted to a

Table 7

Projected Supply of and Demand for New Teachers in California, 1965-66 to 1974-75

Projected for	Estimated Supply of New Teachers 1	Estimated Demand for New Teachers 2	Excess Demand 3
1965-6	12570	19590	7020
1966-7	13260	19860	6600
1967-8	14180	20500	6320
1968-9	13840	20800	6960
1969-70	14600	21520	6920
1970-1	15270	21760	6490
1971-2	15660	22550	6890
1972-3	16460	22470	6010
1973-4	16820	23010	6190
1974-5	17430	23180	5750

Source: Tables 4, 5, and 6.

district is based on the number of children aged 5 to 17 years whose families earn less than $2,000 or receive more than $2,000 under Aid to Dependent Children, annually, multiplied by a "federal percentage" of the state's average annual expenditure per pupil. This "federal percentage" presently is 50 percent. Beginning in fiscal 1966, districts eligible to receive basic aid may also receive incentive grants based on average daily attendance and the increase in the average annual expenditures per child in average daily attendance.

Other programs not covered by Public Law 89-10 also make heavy demands on teachers. The Peace Corps relies heavily on teachers in its concern to help underdeveloped countries. The Job Corps uses teachers at training centers for unskilled youth. The National Teachers Corps aims at increasing the number of qualified teachers by training non-education college graduates in poverty project teaching. Project Head Start is a teaching program for sharpening the learning ability of pre-school children from poor families.

Let us now turn to an examination of how these federal programs are likely to affect teacher supply and demand. Clearly the immediate effect of federal programs is on the demand side: it provides funds for basically new educational programs or for improving existing ones by offering funds to hire more teachers. If, for example, a federal program supports activities for pre-school children who were not attended by teachers before, a new demand for teachers arises. In technical terms, such a new program will make the demand function for teachers shift to the right.

It would be wrong to assume that new federal programs cannot also affect the supply of teachers. In many cases, however, the supply response will be slower than the demand response, which can lead to a dynamic teacher shortage. The supply response which in technical terms would express itself in a movement up the supply function, would come about because of two major reasons. On one hand, the new program might excite qualified persons who are not presently teaching and induce them to offer their services. For example, many do-gooders find poverty work has become the "in" thing to do. Others find that working with pre-school children under Project Head Start, is "what they hoped to do all their lives." And then too, some of the new programs offer greater freedom for an individual to develop his own program than he would find in existing school organizations. For this reason, apparently, some people are willing to work for the Job Corps, although they are not willing to teach in regular local schools.

The second force increasing teacher supply relates to salary. In New York, Project Head Start offers teachers $212 a week while a public school kindergarten teacher receives typically about $150.[14] These higher salaries have both an immediate and long-run effect. In the short-run they might induce people who were not teaching before to accept a teaching position offering a higher salary. In the long-run these select higher salaries are likely to bring about a raise in the general level of teachers' salaries, and as a result improve the relationship between average teacher salaries and those in other industries.

In summary, it would be wrong to say that new federal programs that employ a certain number of teachers result in increasing the teacher shortage by that same number. There can be no doubt that new federally financed programs increase the strains and stresses of teacher procurement. However, it is most difficult to estimate how much they actually increase the teacher shortage. If I were to make a guess, I would say that in the short-run these new federal programs will be staffed by teachers 70 to 90 percent of whom would otherwise be teaching in existing programs. However, within three to five years this figure might decline to somewhere between 50 to 70 percent.

Finally, let us turn to the magnitude of these new federal programs and estimate some of their demands for teachers. The Office of Education has estimated that the Elementary and Secondary Education Act of 1965 provides funds for 34,000 additional elementary and secondary teachers in the United States in 1965; the number is expected to increase to 50,000 by 1966, 65,000 by 1967, 79,000 by 1968 and 88,000 for the period 1969 through 1974.[15]

The Office of Education estimates that California districts are eligible to receive, in basic grants during the fiscal year 1966, a maximum amount of $78.7 million, which turns out to be 6.8 percent of the total amount of aid made available to the 50 states and the District of Columbia in that year.[16] We might therefore apply the 6.8 percentage figure of the national increase to the number of teachers accruing to California in 1966 as a first approximation. There are certain forces which might tend to increase California's share, e.g., California's rapid population growth, urbanization, etc. On the other hand, a relatively high level of income coming to California might tend to work in the opposite direction.

The 6.8 percentage figure applied to projections for 1965 through 1974 are given in Table 8. Accordingly, funds for Public Law 89-10, in 1965, would have given California funds for 2,312 teachers, and the addition is expected to reach close to 6,000 by 1969.[17] The 1965 estimate amounts to 1.5 percent of California teachers for that year.

Let us briefly turn to the smaller programs. About 5,400 teachers are presently serving overseas in the Peace Corps (21 percent more than the 4,465 abroad last fall); they are trying to recruit still another 5,000 in the near future. The Job Corps employs 1,720 teachers at training centers for unskilled youth around the country and aims to enlarge its ranks by about 300 teachers next year. The newly organized National Teacher Corps will require about 300 experienced teachers to administer its program, and the Head Start Program is expected to need about 12,000 teachers.[18]

Possible Future Effects of the Fisher Act of 1961

Probably the most important provisions in the Fisher Act of 1961 were the requirements of an academic major, rather than an education major, and an additional fifth year of higher education for all elementary school teachers. According to the Act, to obtain a standard elementary school teaching credential, it is necessary to have four years of higher education culminating in a higher degree plus a fifth year of upper division graduate work. Forty-five semester hours of credit must include English and English composition as well as course work in five of the following six areas: humanities, social sciences, natural sciences, mathematics, fine arts, and foreign languages. Requirements for a secondary school credential are about the same, the chief exception being that work is required in only four of the six areas listed above.

What are some of the effects of the Fisher Act? There are some early indications that the Act might have had a depressing effect on the number of students completing student teaching, particularly in elementary schools (see Table 9). After a 9 percent increase in the number of these students for each of the two school years 1960-61 to 1962-63, and a 16.6 percent increase the following year, the next two years show a sharp reverse -- a decrease of 1.6 percent from 1963-64 to 1964-65, and a 29.0 percent decrease during the following year. A further 18.8 percent decline is anticipated for the current school year.

It appears that since nearly equal preparation is needed to teach in elementary or secondary schools, and small, if any, salary differences exist, many teachers will prefer to teach in secondary schools. It offers more prestige and status, and the teacher can specialize, thus enjoying the subjects he emphasized in college.

Table 8

Elementary and Secondary School Teachers Expected to be Financed in California by Public Law 89-10 1965-74

Fall of Year	Number of Teachers
1965	2312
1966	3400
1967	4420
1968	5372
1969-74	5984

Table 9

Students Who Completed Student Teaching in California Colleges and Universities 1960 Through 1965 with Estimates for 1966-67

	Number of Students Completing Student Teaching		Amount and Percent of Increase or Decrease over Previous Year			
			Elementary		Secondary	
(9/1 - 8/31)	Elementary	Secondary	No.	%	No.	%
1960-1	5113	3729	-	-	-	-
1961-2	5595	3980	+ 477	+ 9.3	+251	+ 6.7
1962-3	6101	4033	+ 506	+ 9.0	+ 53	+ 1.3
1963-4	7115	4460	+1014	+16.6	+427	+10.6
1964-5	7000	5318	- 115	- 1.6	+858	+19.2
(a) 1965-6	4968	5855	-2032	-29.0	+537	+10.1
(b) 1966-7	4033	6025	- 935	-18.8	+170	+ 2.9

(a) Second semester and summer session 1966 estimates based on assignments already made.

(b) Estimated with 1965-66 figures repeated for six medium and small institutions not furnishing estimates (California Lutheran College, California Western College, Chico State College, Pasadena College, and University of California at Santa Barbara - 228, elementary; 503, secondary).

Source: Memorandum from Superintendent Max Rafferty to the State Board of Education, January 6, 1966.

There is some further evidence that the supply of elementary school teachers has been declining since the passage of the Fisher Act. The decline seems to be heaviest in state colleges rather than in the University of California. For example, Dick Turpin reported that "Only five students plan to take a basic education course for elementary teachers at California State College at Los Angeles in September (1966), compared to 660 a year ago."[19]

The picture appears to be different with regard to the University of California. The Fisher Act of 1961 appears to have had less, if any, effect on the number of public school teachers trained at UCLA. Even in the elementary school field the number has held up well. Immediately after the enactment of the Fisher Act, in 1962, there was some reduction but, by 1965, the number of elementary school teachers trained at UCLA was about equal to pre-Fisher Act level.

Perhaps the best single measure of the number of elementary school teachers being trained at UCLA is the enrollment in elementary school student teaching courses. Figures since 1957 are given in Table 10. Another view of the number of teachers prepared at UCLA can be obtained from placement records. The number of elementary and secondary school teachers placed annually since 1956, which also includes former UCLA graduates, is given in Table 11, broken down into elementary and secondary school teachers.

There are a number of reasons for UCLA's success in maintaining a steady supply of elementary teachers. Among them should be mentioned the fact that UCLA has a long history of requiring an academic major rather than an education major for all elementary teachers. Also, credential candidates are permitted to participate in student teaching upon completion of professional courses in curriculum, psychology, and social foundations, without completion of such courses as the teaching of art, music, physical education and children's literature. Furthermore, upon completion of student teaching, UCLA elementary teachers can obtain teaching positions with a "partial fulfillment" credential; they are allowed seven years to complete the full professional requirements while teaching. Finally, candidates who have the bachelor's degree, after one quarter of practice teaching, may be employed as teaching interns for which they receive 5/6 of the regular salary. If a teacher's performance as an intern is satisfactory, he may become a regular full-time teacher before the end of the year.

Adding a further year of higher education as a credential requirement, has induced school districts to find ways to get around it, at least temporarily. As a result there has been an increase in the number of teachers having temporary credentials. For example, in the summer of 1966, 389 school districts appealed to the State Board of Education to grant them exceptions to the credential rule, all claiming teacher shortages. Their request was granted. For example, the Los Angeles Unified School District expected, in August 1966, that more than 900 funded teaching positions could not be filled. It claimed to have lined up 150 college graduates who had not met all new requirements but were able and willing to teach.[20]

How effectively school districts have been able to get around the new credential requirements so far becomes clear from a recent survey made by the State Department of Education. Thirty-two selected school districts provided information about the preparation of elementary and secondary teachers recruited for the 1965-66 school year. These school districts employed about 27 percent of all California's elementary teachers and 41 percent of its secondary teachers. Included were about 2,900 new secondary teachers and 3,100 new elementary teachers for 1965-66. The information, summarized in Table 12, shows that approximately 35 percent of all new secondary teachers had less than six hours of college work beyond the bachelor's degree. For new elementary teachers, 76 percent fell into this category.

Table 10

Enrollment in Elementary School Student Teaching Courses at UCLA - 1956-57 through 1965-66

Year	Number
1956-7	368
1957-8	394
1958-9	396
1959-60	348
1960-1	314
1961-2	281
1962-3	294
1963-4	325
1964-5	407
1965-6	324

Source: Statement by Erick L. Lindman before the Subcommittee on School Personnel and Teacher Qualification of the California Assembly Committee on Education, Sept. 12, 1966.

Table 11

Number of Elementary and Secondary School Teachers Placed by UCLA - 1955-56 through 1964-65

Year	No. Elementary	No. Secondary
1955-6	315	351
1956-7	385	397
1957-8	430	425
1958-9	437	440
1959-60	441	376
1960-1	426	396
1961-2	457	388
1962-3	471	355
1963-4	521	428
1964-5	524	449

Source: Statement by Erick L. Lindman before the Subcommittee on School Personnel and Teacher Qualification of the California Assembly Committee on Education, Sept. 12, 1966.

Table 12

Preparation of New Teachers Recruited by 32 School Districts for 1965-66

Maximum Preparation of New Teachers 1965-66	Number of Secondary Teachers (2,899)		Number of Elementary Teachers (3,081)	
	Recruited from Out-of-State	Prepared in California	Recruited from Out-of-State	Prepared in California
Less than 6 semester hrs. of work beyond bachelor's degree	734 (25.3%)	282 (9.7%)	846 (27.5%)	1,493 (48.5%)
Six semester hrs. or more beyond the bachelor's degree	469 (16.2%)	1,414 (48.8%)	341 (11.0%)	401 (13.0%)

Source: Memorandum from Superintendent Max Rafferty to the State Board of Education, January 6, 1966.

The State Committee on Public Education requested that this paper cover "as much hard data as possible of a summary nature for California as a whole and information from selected districts about the number of applicants per position and the percent of applicants that are fully credentialled in California."[21]

In response to this request, the Santa Monica School District helped us prepare a questionnaire which we then sent to the 13 largest school districts in California (a copy of the questionnaire can be found as Attachment II). We sought the help of a school district in order to phrase the questions in such a way as to maximize the likelihood of receiving relevant data. However, the various school districts left no doubt that they do not have the sort of information needed to answer the questions raised by the State Committee on Public Education. This situation is perhaps best summarized by a paragraph written by the personnel coordinator of one of the great school districts in California: "Unfortunately, records are not maintained on most of the questions you have asked and could not be obtained without a great deal of research, the manpower for which is not available in this office. In some cases the desired information is not available."

In short, none of the 13 school districts approached was able to give us the requested information.

Unless major changes take place, it appears that the Fisher Act will continue to have a depressing effect on the number of students seeking teaching credentials. Especially hard hit will be the elementary schools since the Fisher Act further reduced the attractiveness of elementary compared to secondary school teaching. Most likely the pressure on the State Board of Education will be great enough to increase the number of temporary credentials. Unless state colleges take steps similar to those taken by the University of California they will continue the recent trend of training relatively few elementary school teachers.

VI. Some Possible Remedial Steps

The previous analysis has identified some pivotal issues that should be carefully considered if the future demand for and supply of teachers in California is to be brought into better balance. We will now discuss specific steps that could be taken to alleviate the current and projected shortages.

Need for More and Better Information

As a first step, we would like to emphasize the need for better and more systematic data. More than that, we would like to propose a way of providing California with high quality, systematic, and up-to-date information.

It is impossible to plan wisely to meet tomorrow's educational needs with the paucity of information now available. Therefore California, and in particular the State Department of Education, should give serious consideration to steps designed to improve the data base for understanding teacher problems in the future. Specifically, we would like to propose the establishment of a California Education Lookout Station which would have as its general task the systematic exploration of future needs, the identification of coming problems, and the establishment of new goals and directions for California education.

Clearly, investigations into teaching and teachers would play a significant role in such an effort.[22] It would allow for a sophisticated, systematic and broadly gauged approach to the problems of teacher demand and supply. Some of this work might be going on at present, but most likely on a low key. If so, these activities should be broadened, enriched, systematized, and coordinated with those of other studies of the future. Only after answering such questions as "What different futures can we visualize for California?" can we attempt to understand the implications of alternative futures for teacher needs. A variety of sensitivity tests could then be made, designed to show those variables which are likely to have a crucial effect on future teacher supply and demand conditions. As this work is carried out on a continuous basis, and updated as more and better information becomes available, its usefulness should increase.

The California Education Lookout Station would not only collect data, but also carry out various analyses. It would study population changes and their likely effect on educational needs; attempt to make intelligent projections; concern itself with the likely effects of certain scientific and technological advances; investigate possible underinvestment in education; and study the special problems of certain minorities groups, age groups, geographic areas, etc. One of its main tasks would be to produce data and provide analyses designed to improve our understanding of future teacher demand and supply, and suggest ways to cope with possible imbalances.

We would like to turn briefly now to another aspect of information. While no state can ever hope to have all those who hold teachers' credentials actually engaged in teaching, it should be possible to improve the ratio. One reason why a person with teaching credentials might not be teaching is that he or she could not find the position that he or she is seeking. There should be ways to improve the dissemination of information on open teaching positions to those who have the credentials to teach and vice versa. The flow of such information from schools of education to newly California-trained teachers appears to be quite good; but throughout the state generally, people who received their training earlier, or who were trained in other states, could be more effectively provided with this information, perhaps through the California State Employment Service, which has offices throughout the state, or by some other means.[23]

Let us now turn to the more specific remedies that might be considered to improve the supply of teachers in California and bring demand into better balance with supply.

Salary Level and Structure

The importance of teachers' salaries in relation to total primary and secondary education expenditures is frequently not fully understood. As a matter of fact there are few industries (if one can call primary and secondary education an industry) that are more labor intensive. In California, about two-thirds of the current expenditures are taken up by salaries of teachers and those who directly support them.[24]

The adequacy or inadequacy of teachers' salaries must be examined in terms of salary level and salary structure. Inquiries into those two issues best proceed hand-in-hand. While we suggest careful inquiry into the appropriateness of existing salary levels, a careful inquiry into the salary structure itself may offer greater promise.

As is well-known, the quality of education is determined to a very large extent by the quality of the faculty; and the quality of the faculty depends primarily on the level and method of remuneration. Perhaps teacher shortages in certain areas (see Section IV) are directly related to the existing single salary schedule; this method appears to overpay certain subject area teachers and underpay others. The result is waste on two levels -- excessive spending of public funds in surplus areas, and teacher shortages, accompanied by lower teaching standards, in others.[25]

One way to reduce the teacher shortage problem would be to raise the single salary schedule until teachers in subject areas with the greatest shortage would be adequately remunerated, and shortages would disappear. Such a step would be extremely wasteful in overpayment of teachers in most subject areas, and the question would arise whether this additional money would be wisely spent on the elimination of shortages.

Another way to meet the problem would be to investigate other remuneration systems that would reduce or eliminate teacher shortages at a lower cost. One such method would take the form of market pricing. Under such a pricing system each subject area would be paid in line with what its services could command in the open market. If such an arrangement could be made, it would most likely be quite efficient, although it might lead to strong objections from teachers' unions. More importantly, artificially grouping teachers by subject area alone does not take into consideration other factors which differentiate teachers regarding the salary they can command. Also great care would have to be taken to be sure that the multisalary structure would not be so cumbersome as to interfere with prompt, judicious salary adjustments in years to come.

Perhaps the middle ground solution would be to establish a base salary for all teachers with given qualifications, and then provide for special bonuses for teachers in shortage areas with an annual or biannual review. As a practical step the existing single salary schedule could be used as the base salary; provisions could then be made to allow special bonuses for those who teach where shortages exist -- subject areas, school levels or understaffed schools.

Removal of Barriers to Enter Teaching Profession

There can be no argument about the desirability of establishing certain minimum standards for those who teach in California's schools. This is a prerequisite to the maintenance and improvement of the quality of education; however, it may create an artificial and often rigid wall. While it bars those unqualified to teach, it may also exclude some worthwhile talent. In short, careful consideration should be given to the appropriateness and flexibility of existing credential requirements.

Greater flexibility in hiring teachers could also be achieved in other ways. There is some evidence that the supply of grade school teachers could be greatly increased, even without a change in credential requirements, if certain teachers, expecially mothers raising children, were permitted to teach part time. This view was eloquently expressed not so long ago by a teacher, who stated:

> There is a huge reservoir of teacher manpower which has remained untapped for many years. Hundreds of women who hold regular teaching credentials would welcome the opportunity to teach school again on either a partial day or a daily hourly basis.
>
> In every community there are professional women who are not teaching school now because of district work hour regulations. Many of them are mothers of school children and follow a family life schedule.
>
> They feel that it is their duty to be at home in the morning until after their children leave for school and in the home when the children return from school. However, they would be free to teach on a three to five hour a day contract for the school year.
>
> There are other persons holding regular teaching credentials who are not parents but who have a limited outside work schedule who would also be free to sign a part-time teaching contract.[26]

Such a step could not only induce mothers with teaching credentials to return to teaching, but also encourage those without credentials to seek some.

The same would hold true at the high school level, particularly in relation to teaching English. For example, a mother with a master's degree in English could make a valuable contribution by grading themes for a high school English class.

Finally, careful thought should be given to humanizing personnel departments in school districts. Specifically what I have in mind is greater flexibility regarding individual qualifications, or possible special situations, the applicant may have. These things often play a major role in determining whether or not a person will be an effective teacher. Administrative ease obviously favors strict impersonal rules, but often at the loss of some promising, able teachers.

Preparation of More Teachers in California

California credential requirements emphasize the importance of teachers being broadly educated; the real need for education courses has been minimized. Therefore, increasing the number of teachers' colleges or enlarging schools of education in universities would not necessarily increase the number of credentialled teachers substantially. However, a two-pronged attack may succeed in producing more teachers: First, steps could be taken to help those with provisional credentials to acquire the formal education necessary to give them permanent credentials. And second, more effective incentives could be provided to make teaching in California schools more attractive.

In connection with the second attack, our earlier discussion on improving salaries and easing entry into the teaching profession is germane. In addition, the federal government has recently taken steps that should provide an incentive for students to choose a teaching profession -- the federal loan program. A student can now borrow up to $1,000 a year, with the total amount per student not to exceed $5,000. Up to half of the student's loan is forgiven, if he or she becomes a teacher after graduation.[27] This discriminatory measure favors the education profession and will tend to have a positive effect on the supply of new teachers. Finally, enhancing the esteem in which society holds teachers could greatly increase the number of those wanting to teach in California schools.

The Fisher Act has loosened the bonds between schools of education and students who are potential teachers. Therefore, schools of education must look for new ways to reach students majoring in one of the liberal arts, and put before them the most attractive picture possible of teaching. Furthermore they should provide students with the best and most definitive information about certificate requirements, teaching conditions, and the teaching profession.

Specifically, schools of education should try to make teaching as respectable as possible on campus. They should try to reach beginning students in various ways, establish liaison between education and other faculties, provide exciting career counseling to lower division students and explore the possibilities of departmental majors becoming future teachers.

Since California is a very attractive state and benefits from large-scale in-migration, it should have a relatively easy time in attracting new teachers from outside its borders. While this process has been successfully going on for quite some time, out-of-state recruiting lends itself to streamlining and greater efficiency. However, whatever steps are taken, they must be circumspect. It must be remembered that recruiting out-of-state teachers constitutes losses to other states; they often regard such recruiting efforts as obnoxious raiding.

Out-of-state recruiting, unfortunately, is also discriminatory and tends to favor school districts often with the smallest shortages. The districts who are most likely to need out-of-state teachers tend to be those suffering from a general lack of funds, with relatively low salaries and inferior working conditions. These circumstances make it difficult for them to effectively recruit out-of-state teachers. Recognizing this problem, I nevertheless would caution against seeking state aid for poor districts to effectively recruit new teachers from other areas. Such a step would pit state against state and is likely to bring about retaliation from some states and further teacher shortages in others.

Technology and Curriculum Improvements

It has been said that hospitals and schools are among the most backward institutions in terms of management, operation, and financing methods. While this allegation can be disputed, the fact remains that schools are highly labor intensive and therefore inefficient use of manpower is particularly wasteful.

In recent years some major technological improvements have been proposed and experimented with in the field of education. Language laboratories are proving very successful. Great progress has also been made in relation to educational television and there is much evidence that it can become an effective means of teaching, particularly in highly specialized courses. Often educational television is best used in conjunction with arrangements giving students the opportunity to review some of the televised material with teachers.

Programmed teaching and teaching machines in conjunction with computers which make it possible to match students' abilities and needs with teaching material also offer promising aids to teaching.[28]

Vocational education will profit from experience gained through training National Aeronautics and Space Administration and U. S. Air Force personnel. Techniques developed in these programs are particularly effective where repetitive operations are common. One outgrowth of these programs is the simulator-trainer which uses programmed learning to integrate displays of animated schematics, pre-recorded lecture and tutor sessions, text, and the building and manipulation of both theoretical and physical models of equipment. It appears to be especially effective in training students who are slow learners. It shortens the training period, and may also help to predict the rate at which the trainee will learn his technical skill and the ultimate level he will attain. Furthermore it permits trainees to be channeled into curriculum specialties more suited to them.[29]

The curriculum should be adjusted to allow students to do more independent work; enough emphasis is not given to self-education by able high school students. If such students could be identified and channeled into special programs, care would have to be taken to provide enough library facilities to meet their needs.

Finally, I hope that serious consideration will be given to changing our archaic system of offering formal education only 9 months of the year. This is a hold-over from the days when we were still a rural society and all hands were needed during the summer to bring in the harvest. With very little additional effort and expense, school facilities could be used for 11 instead of 9 months of the year. As a matter of fact, a substantial number of youngsters presently attend school about 10 1/2 months by going to summer school. However, such arrangements are haphazard, both in terms of the income they offer teachers and the lack of integrated curriculum for pupils. Should we succeed in lengthening the school year, we could either consider reducing the number of years youngsters go to high school or enrich their educational experience while there.

Most of the curriculum and technology improvements discussed above are rather expensive and involve major capital expenditures. Nevertheless they should be carefully considered in terms of alternatives, one of which is a continuous shortage of teachers associated with low quality education.

VII. Summary

The future will not provide California schools with all the teachers they want; nor will it provide enough teachers endowed with all the qualifications we would like them to have. Teacher shortages will remain with us, but there are some things that can be done to relieve them.

Shortages can continue to be the result of poor planning or poor salary control. They can be secular in character, and likely to be with us for a long time, or follow a cyclical pattern, demanding attention when they arise. As a matter of fact, at the moment we are probably experiencing cyclical shortages on top of secular ones. We have pointed to a number of items which through the years have contributed to minimal planning for the tremendous increase in school population, and for its migration to large urban centers, during the past several decades. Combined with this is the universal prosperity the United States is now enjoying, with varied job opportunities available for educated people. It is complicated by the effect the Viet Nam War is having on industry's demand for more trained people, especially women, hired at better than school teacher wages. All of these things accentuate the current teacher shortage.

It would be wrong, however, to assume that the shortages are reflected only as problems. They also constitute promising and exciting opportunities for major changes in the educational system. Perhaps the time to initiate constructive changes to eliminate serious teacher shortages is while one is occurring.

Dynamic shortages can be reduced by providing better information on which to base estimates of future needs. If crises are foreseen, they can often be averted. Serious consideration should be given to the establishment of a California Education Lookout Station. It could assume many of the functions presently carried out by research units of the State Department of Education, but would also do much more in systematic data collection, projection, and analysis. Metropolitan areas, or large school districts, could establish their own lookout stations to work in conjunction with the state one, with a mutual exchange of information and planning data.

Teacher shortages resulting from salary or wage control should be given equal attention. Careful consideration should be given to revising the salary structure of teachers in California schools. Within limits, it should be more flexible and lend itself to greater and more rapid adjustment to forces that affect teacher supply and demand. Perhaps the single salary schedule should be converted into a base salary on top of which bonuses could be paid to relieve shortage conditions.

At the same time, careful thought should be given to a review of the existing credential requirements, and to the way they are administered. Whenever possible, it should be made easy for well-qualified mothers, housewives, and particularly those who have already raised their families, to return to the classroom. Many women in these groups have college educations; a large number of them hold teaching credentials. The educational system should be flexible enough to meet their special needs (part-time teaching, shorter working hours, work they can do in the home, etc.) and thus gain a valuable solution to some of their own.

The large federal funds that have recently become available to education for the first time should be used to experiment with new teaching techniques aimed at offering better education without reducing the teacher-pupil ratios. This could result in great improvements in education, but would require the wholehearted cooperation of teachers, their unions, and school officials. Better ways must be found to articulate differences between these groups and bring them to an effective solution. Very often this will involve salary increases to alleviate the fear of machines replacing teachers.

Adventuresome new ways must be found to enhance the teaching profession and provide the incentive for students to learn. We have only scratched the surface in casting aside old time-worn restrictions and adopting imaginative new ones. Our ability to achieve this will determine our nation's future.

ATTACHMENT I

A Three-Stage California Growth Model

Regional projections depend on the quality and quantity of production factors in a state, which in turn depends, in part, on migration. Industry tends to choose its geographic location, particularly for new capacity, according to efficiency considerations and market size; families will change their residence location because of job and income opportunities and other factors defining the social, physical and economic environment in which they would like to reside.

To analyze the causes and effects of migration of people and plant capacity, as well as the internally generated changes in the area, we have developed a model with three successive stages of approximation. The first approximation can be roughly identified as a national disaggregation approach, using trend and shift analysis; the second is a supply approach; and the third is a demand approach. Each approximation modifies and elaborates on the results of the preceding stage. This procedure permits the introduction of analytical judgments about likely public policy shifts, and also allows for the use of some quantitative behavioral relationships which have been only roughly estimated as well as those which have been more precisely tested.

The flow chart provides us with a map of this three-stage migration model.

First Approximation - National Disaggregation Approach

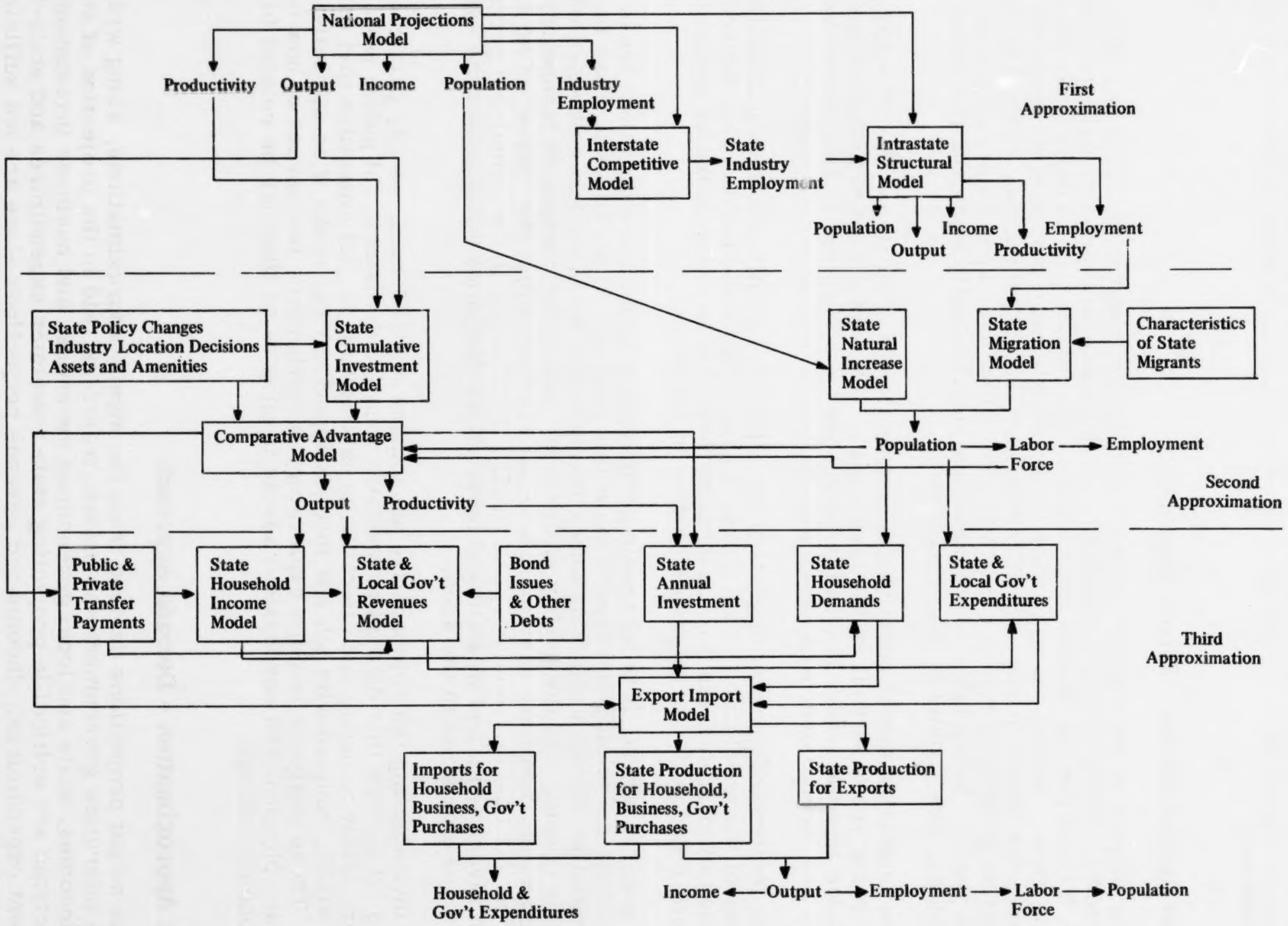
We begin our procedure with a set of economic and demographic target year projections for the nation as a whole. National projections are needed to show the total supply and demand of productive factors and output from which each state potentially can draw. These estimates serve as control totals. National projections are needed because many trends and policy shifts are common to all states and can best be studied in the aggregate. Finally, national projections are needed because they can be used as a standard against which to measure deviations of individual states so that analysis of the trends in a state's relative position in the nation can be made.

We use the national projections made by such groups as Resources for the Future, National Planning Association, and various federal agencies. In conformance with most of these studies, we will assume a reasonably high employment rate for the nation, although our procedure permits any given state to develop higher or lower rates of employment.

National industry employment projections serve as a starting point for state projections. Examining past trends in the state allocation of an industry's employment, we use a differential-proportional shift analysis to tentatively allocate the target year industry employment projections among states.

We next compare the current "economic structure" and past changes in "structure" for the fifty states. The economic structure includes the interrelationships in the state among such variables as output, productivity, industry employment, labor participation, population, average earnings, and per capita incomes. This procedure permits us to project the structure of a given state consistent with its estimated employment

STATE ECONOMETRIC GROWTH MODEL


National Projections Model
Productivity
Output
Income
Population
Industry Employment
Interstate Competitive Model
State Industry Employment
Intrastate Structural Model
Population
Output
Income
Productivity
Employment
First Approximation
State Policy Changes Industry Location Decisions Assets and Amenities
State Cumulative Investment Model
State Natural Increase Model
State Migration Model
Characteristics of State Migrants
Comparative Advantage Model
Population
Labor Force
Employment
Output
Productivity
Second Approximation
Public & Private Transfer Payments
State Household Income Model
State & Local Gov't Revenues Model
Bond Issues & Other Debts
State Annual Investment
State Household Demands
State & Local Gov't Expenditures
Third Approximation
Export Import Model
Imports for Household Business, Gov't Purchases
State Production for Household, Business, Gov't Purchases
State Production for Exports
Household & Gov't Expenditures
Income
Output
Employment
Labor Force
Population

projections. It also enables us to revise the tentative state industry employment projections in case structural inconsistencies show up. Should this happen, changes in the industry employment estimates are needed. Lead lag-relationships can be used in this interstate comparison. It permits us to examine the effects of other variables on employment.

Second Approximation - Supply Approach

The outputs of the disaggregation approximation serve as inputs to a detailed migration model, which incorporates such variables as state and national employment, wage rates, armed forces, school enrollments, and family size to determine net migration for the state. Adding net migration to the state's base period population and natural increase (as based on state fertility and mortality assumptions, related to the national population growth) provides a revised population (age, sex, color) projection for the target years. Using labor force participation-rate estimates, the projected labor force (age, sex, color) is then estimated.

The migration model permits the preparation of projections from the base year to intervening years as well as the target year. One advantage of introducing such partial dynamics into the model is that the target year employment estimates can be revised if they are inconsistent with likely developments in intervening years.

The factors influencing migration are likely to be different among the different classes of the population. Therefore, we investigate the relationship between characteristics of migrants and their migratory behavior in order to better estimate the volume and composition of migrants coming to the state.

In general terms, it is an area's comparative advantage over other areas which determines its volume and type of economic activity. This advantage can be affected by population changes which influence market size; by labor force changes which influence the quantity and the quality of the labor supply; by changes in technology, scales of production, and final demand mix -- all of which affect the "value" of an area's physical and human resources; and finally, by changes in the cumulated private and public investments and in state and local policy decisions which affect the valuation of assets and amenities in the area.

In investigating the comparative advantages of California, we pay particular attention to (a) factors that determine industry location decisions, (b) public policy decisions that are likely to occur and affect the area's advantage, (c) amenities that exist in the state which, coupled with job and income opportunities, make it an attractive place to live. These analyses require exploratory investigations into issues of how best to measure physical and nonphysical assets in an area so they can be related to measures of economic change.

Third Approximation - Demand Approach

The output projections derived from the supply approximations, along with estimates of net interstate government and private transfers, aid in the projection of state household incomes, state and local government revenues, and business investment. These projections are critical in projecting state consumer expenditures and state-local government expenditures. Income and revenue projections alone are not sufficient. The population characteristics (including income distribution estimates) are examined to determine the kinds, as well as the amount, of household expenditures, and to determine the likely development in the expenditures for various government programs, some of which could be financed from government borrowing.

Having projected the output and the final demands of households, business, and government in the state, we are now prepared to ask how much of this output will be exported, how much will be sold to each of the state final demand sectors, and how much of the final consumption will be imported from other areas. By specifying the implied markets for the components of state output, we can determine whether the projected magnitudes of these markets are inconsistent with other assumptions. For example, we could have implied an export market for California lumber products which is too high in light of competition from southern lumber producers. If this is so, and if there are no production offsets resulting from other inconsistencies, then we would revise our output estimates, which in turn would lead to revisions of state income and employment estimates, followed by revisions in the labor force and population projections.

ATTACHMENT II.

Institute of Government and Public Affairs
University of California, Los Angeles

Please answer the following questions for as many of the school years indicated as possible. If you can offer data with respect to other years please indicate the years clearly. It would be appreciated if you would return the questionnaire in the enclosed envelope by September 1, 1966. Thank you.

	For the School Years Indicated	1951-52	1953-54	1955-56	1957-58	1959-60	1961-62	1963-64	1965-66
1a.	How many full-time teaching positions were authorized?								
b.	How many of these positions were filled by teachers from the previous academic year?								
c.	How many teaching positions were held by persons not fully credentialled?								
d.	How many of these positions remained unfilled for the course of the year?								
2a.	How many applications were received for full-time teaching positions?								
b.	How many of these applicants were, or would be, fully credentialled by the start of the years indicated?								
c.	To how many persons did you offer contracts who did not accept them?								

Footnotes

[1] Blair E. Hurd, California's Need for Teachers, 1965-1975 (Sacramento: State Department of Education, 1965), pp. 4-6.

[2] Memorandum from Superintendent Max Rafferty to the State Board of Education, January 6, 1966.

[3] Blair E. Hurd, op. cit., p. 11.

[4] Carl A. Larson, "California's Need for Teachers, 1959-1971, "Bulletin of the California State Department of Education, Sacramento, Vol. XXIX, No. 1 (January, 1960), p. 26.

[5] Blair E. Hurd, op. cit., p. 12.

[6] Communication from the State Department of Education.

[7] Blair E. Hurd, op. cit., p. 12.

[8] Blair E. Hurd, op. cit., pp. 14-15.

[9] Blair E. Hurd, op. cit., pp. 15 and 18.

[10] Blair E. Hurd, op. cit., p. 22.

[11] Ibid. pp. 5-6.

Note: It is important to be aware of the difference between provisional credentials and emergency provisional credentials. In 1964-65, there were 681 emergency provisional credential holders out of a total of 8,000 provisional credential holders.

[12] Blair E. Hurd, op. cit., p. 4.

[13] Public Law 89-10, pp. 1-5.

[14] W. S. Pinkerton, "Absent Teachers," The Wall Street Journal, Sept. 6, 1966, p. 11.

[15] U.S. Office of Education, Projections of Educational Statistics to 1974-75, (Washington, D.C.: 1965) OE-10030-65, Circular 790, p. 30.

[16] U.S. Office of Education, Focus on Title I: Schooling for Educationally Deprived Children, (Washington, D.C.: 1966), OE-35077.

[17] These figures are lower than those given by Superintendent Max Rafferty who stated earlier this year: "It is estimated that an additional need for 4,000 teachers at the very least will be felt during the second semester of 1965-66 and the school year 1966-67, assuming there is no cutback in this phase of the Great Society program." (Memorandum from Superintendent Max Rafferty, January 6, 1966.)

[18] W. S. Pinkerton, op. cit., p. 1.

[19] Dick Turpin, "Waiving of State Credentials Urged in Teacher Crises," Los Angeles Times, Aug. 9, 1966, Part I, p. 3.

[20] Dick Turpin, op. cit., p. 31.

[21] Letter from David N. Evans, Research Director, dated August 3, 1966.

[22] Werner Z. Hirsch, "Planning Education Today for Tomorrow," Urban Affairs Quarterly, Vol. 2, No. 1, September 1966.

[23] I owe this point to Mr. Wesley I. Dumm, member of the State Committee on Public Education, who brought it to my attention in our discussion of this general problem. At present the California Teachers Association is doing some of this work, but most likely not at a level it needs to be done.

[24] Office of Education, Digest of Educational Statistics, OE-10024-64, 1964, p. 63.

[25] Joseph A. Kershaw and Roland N. McKean, Teacher Shortages and Salary Schedules, (New York: McGraw-Hill Book Co., 1962).

[26] Los Angeles Times, September 11, 1966, Section G, p. 4.

[27] Public Law 85-864, Sept. 2, 1958.

[28] Launor Carter and Harry Silberman, The Systems Approach, Technology and the School, (Santa Monica: System Development Corporation, 1965), SP-2025, 30 pp., and Ralph W. Girard, The New Shape of Education, (Los Angeles: UCLA, Institute of Government and Public Affairs, 1965) MR-58, 18 pp.

[29] Norton F. Kristy, The Simutech Trainer: Potential Uses for Technical and Vocational Training Programs, (Los Angeles: UCLA, Institute of Government and Public Affairs, 1965), 12 pp.

APPENDIX N

INSTRUCTION

Prepared for the
State Committee on Public Education

by

John I. Goodlad

Assisted by
William E. Baker and the following:

R. A. Bernert, S. J.
H. Warren Dohemann
William L. Duff
Hugh D. Lawrence
Ann Lieberman
Jimmy E. Nations
Daniel Purdom
James P. Roberts
Melvin Suhd
George D. Thayer
Elisabeth Tietz
Eugene A. Torgunrud
Kenneth A. Tye

January, 1967

APPENDIX N

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APPENDIX N

INSTRUCTION *

I. INTRODUCTION

Nothing more directly influences the quality of learning in our schools than the quality of instruction. Subject-matter, how students come to it, and the setting in which they learn profoundly determine the behavior evoked in children and youth. Instruction is the what and how of teaching; it is the substance of this paper.

What is taught in our classrooms is very much - perhaps too much - determined through decisions made by persons and in places remote from the schools. These decisions produce what is commonly referred to as "the curriculum," the subject of Professor Hanna's paper.

This curriculum consists of topics and suggested or required textbooks, arranged in some kind of sequence and specified by subjects and grades. But, clearly, there is another curriculum, significantly influenced by this more remote one: the curriculum of the classroom. Determining the nature of this curriculum does not reveal to us the nature of student learning, but it brings us close. Where Professor Hanna's paper ends, this one begins, but there should be and, indeed, there is overlap.

Instruction takes place in school and classroom settings that sometimes aid and sometimes impede learning. Therefore, the analyses and recommendations presented here extend beyond the what and how of teaching into certain closely related conditions of our schools: overall patterns of organization, grouping practices, ways of using teachers and other resources, scheduling practices, and so on. The goal worth achieving is a set of school and classroom conditions deemed supportive of instruction and conducive to learning.

The intended contribution of this report is a series of recommendations for improving present instructional conditions in California's schools and for assuring continued instructional improvement (Section V). But useful projection for the future calls for realistic appraisal of the present. And so, Section IV presents what the writer believes to be a reasonably accurate description of the current instructional scene in California and the nation, a description that is part of a national study now being conducted by the writer and his associates. Projection for the future calls also for guidelines derived from what appear to be promising instructional practices not yet generally implemented in our schools. Consequently, Section III presents a brief critique of innovative practices deemed by the writer to be worthy of serious consideration for California's schools.

Unfortunately, this study was commissioned and partly executed when schools were not in session. And, for part of it (almost all of November), it was necessary to me to be abroad on a special assignment for the Department of State. Allowing time for the

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*Prepared for the State Committee on Public Education by John I. Goodlad, Professor and Director, University Elementary School, University of California, Los Angeles, and Director, Research and Development Division, Institute for Development of Educational Activities (with the assistance of those persons identified on the frontispiece).

schools to make a firm start in September and early October left only a brief period for school and class visits. This is particularly regrettable in view of the desired dependence of the conclusions on first-hand observations. The fact that so little data on public school instruction and related matters are available is itself evidence of the need for reform.

The newer curriculum approaches recommended for the schools stress the man-made character of knowledge and the fact that knowledge is in the eye of the beholder. And the beholder beholds through tinted glasses. One cannot draw conclusions about the conduct of education, what constitutes good practice, and how schools might be improved without sifting the whole through a screen of assumptions. These, in turn, reflect one's knowledge, values, and beliefs.

II. SOME GUIDING ASSUMPTIONS*

Without doubt, my views regarding the present condition of our schools and what should be done to improve them stem from a set of assumptions about education. The reader will be better able to appraise my recommendations, I think, if he is aware of at least part of the rationale behind them.

First, it is extremely difficult to predict the kinds of behavior that will be most useful for shaping and living in tomorrow's world and which, therefore, should be cultivated today in boys and girls. We know that the problems of the four P's - poverty, population, pollution and attaining peace - will be with us to 1980 and far beyond.[1] But we know little about their implications for educational ends and means. The futility of preparing people to fill pre-determined slots in our society is becoming increasingly clear, however. We can be reasonably confident, too, that the significance of jobs as such will decline in relation to the significance of important human work, at least in western civilization, and that education as an end in itself will steadily increase in significance.[2] The implication here appears to be that individual human talent must be developed as an end in itself through processes of life-long learning.

Second, the self-renewing individual probably will require proficiency in a talent developed for its own rather than any overtly utilitarian sake and the breadth to cope with the vast array of diverse problems and pressures inherent in modern life.[3] The school must counter the twin evils of perpetuating a narrow range of approved expectancies and of encapsulating the individual within the narrow confines of specialization.[4] To be effective, then, the curriculum must encompass a broad range of human pursuits and provide an appropriate interplay between general and special education.

Third, if we value mankind at all, we always must be preoccupied with developing individuals who possess a sense of purpose, identity, and worth. Self-doubt and alienation from others are perennial human illnesses that show no sign of lessening in modern society. Change, rapid obsolescence of values and things, and automation compound the search for identity. Clearly, from the beginning, boys and girls in our schools must assume (and this means have the opportunity to assume) responsibility for their own education. Certainly, no one else can, although many other persons seem to think that they can. School must not be a struggle or even a dialogue between those who know (teachers) and those who don't (students).

Fourth, it is no longer difficult to select and package for instruction those few, most important bits and pieces of knowledge; it is impossible.[5] There is now too much of it.

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*Numbers refer to footnotes and references in Attachment I.

Coverage of a few specified topics from September to June is futile. Teaching as telling must rate low in any hierarchy of instructional significance. The school program must emphasize fundamental concepts and modes of inquiry; in effect, it must promote the learning of how to learn. It must provide many opportunities to explore, to try, to test, to inquire, and to discover for one's self.[6]

Fifth, the vast range of human differences from individual to individual in all realms of human endeavor calls for flexibility in educational expectations and diversity in instructional practices.[7] But the gap between what we know about individual human differences and our provisions for them in schools is formidable.[8] Children come to school with vast differences in their readiness to learn and proceed at widely varying rates. Similarly, each child grows up with ragged edges in that each of his many traits varies markedly in its progress toward maturity. We fail to take these differences into account in setting standards, in organizing the school, in grouping practices, and in instructional methods and materials.[9]

Sixth, the steady evolution of our schools demands planned, continuous programs for the self-renewal of educators, administrators, and teachers alike. We must assume that pre-service teacher education is only the most rudimentary beginning preparation. There is ample evidence, for example, to show that most teachers cannot institute needed reforms in the what and how of teaching without extensive in-service training.[10] State and local school systems, following the pattern of industry, must provide for this training.

Seventh, many of the changes needed for and in our schools are fundamental; they are unshackling rather than merely innovative in character. School people are not adequately facing up to this. Many believe that changes can and should be made without upsetting the "traditional way of doing things." But it is a basic biological and sociological principle that a significant change in any part of a system affects the whole. A fundamental educational change likewise will affect the whole system. And anything other than a fundamental change is not worth the time and effort usually involved in any change.

Eighth, the schools we need will be the result of re-examining and restructuring all major elements of school-keeping, not merely of a single innovation. No school in the United States has put together in a unified whole a conception of school function, a precise set of behavioral goals for children, a dependent pattern of school organization, appropriately redesigned curricula, instructional procedures reflecting modern theories of learning and knowledge of individual differences, and a comprehensive approach to the use of instructional materials. We need to know much more about all of these school components, but we know enough to do a vastly more effective job.[11]

Ninth, there is a crippling gap between the day-to-day conduct of schooling on one hand and the systematic investigation of educational phenomena on the other. There must be new, independent institutions serving as intermediaries between universities and public schools, appraising both the problems of the schools and the relevance of research. The new regional laboratories, created under the provisions of P. L. 89-10 (Title IV of the Elementary and Secondary Education Act of 1965) offer the potential for filling this gap, if they can keep from becoming either too research oriented or too involved in service.

Tenth, state and local educational requirements, parental pressures, and the difficulties involved in changing any large, bureaucratic institution, seriously restrict innovation and experimentation in our schools. There is need, therefore, for truly experimental schools existing apart from the requirements of any state or local school system. And there is need for demonstration schools wherein innovative ideas emanating from the experimental schools are developed under widely varying circumstances. These ideas are developed further in the concluding section of this report.

Eleventh, it is unlikely that existing educational structures and institutions will seriously re-examine their own functions in an objective, unprejudiced fashion. Institutions tend to perpetuate themselves, spending a large proportion of their time and resources on self-preservation. In the process, they frequently fail to recognize the changing needs and nature of their present or potential clientele. For example, our school systems have not seriously re-examined their role in the light of recent, significant societal changes and the emergence of new, non-school educational media.[12] There needs to be some "outside" mechanism, not captured by any "establishment" which engages continuously in analyses of society and current educational practices, and in the projection of needed educational changes (see Section V of this report).

Obviously, this list of eleven assumptions could be readily expanded. It is sufficient, however, to express the biases of the writer. The many footnotes included here, together with some additional readings (See Attachment I for both lists) provide the eager beaver with some documentation and a rather comprehensive inventory of analyses of and suggestions for American education. Also, these eleven propositions not only suggest the arguments behind my recommendations but also provide a glimpse of cards yet to be dealt.

III. SIGNIFICANT EDUCATIONAL CHANGE AND INNOVATION

The last decade, in particular, has provided many proposals for educational change and some implementation of them. However, as noted in the preceding section, certain realities conspire to inhibit actual changes in the schools. Talk far exceeds action. The present situation in California probably is not unlike that in the rest of the nation, although there is encouraging ferment as we shall see in Section IV.

Few of the developments briefly described below have been subjected to rigorous, scientific evaluation. There are several reasons for this. First, much of what is proposed represents logical deduction from premises which run counter to or which are at least different from some of the premises guiding earlier educational epochs. For example, most of the new projects in curriculum have purposes that differ from those of the curricula these projects seek to replace. Tests that would have been appropriate before are inappropriate now. Second, many new practices have been in operation for so short a period that any conclusions regarding their effectiveness would be premature. Third, much educational research of the past has been in the laboratory, with simulated rather than actual situations and with a narrow focus. In fact, educational research has been pitifully impoverished; little wonder that its accomplishments have been meager. Fourth, educational proposals, like economic and sociological proposals, only rarely represent direct extrapolation from empirical data. Instead, principles are derived from experimental data, principles that must then be screened for their relevance to educational policy and practice. A growing body of principles in the behavioral sciences has such relevance and increasingly is being looked to by educational leaders.

Curriculum

The post-World War II curriculum reform is now fifteen years old, with the last decade of it, in particular, producing sweeping changes in mathematics and the natural sciences.[13] The National Science Foundation continues in the support of these fields, with the United States Office of Education recently moving vigorously into support of English and the social sciences. The humanities continue to lag, however, in spite of growing support from private foundations and the federal government. Our neglect of the arts in school has bordered on becoming a national disgrace. Nothing short of a renaissance in the humanities will balance the curriculum.

The new alphabet soup of curriculum - BSCS, CBA, ESS, PSSC, SMSG,* and all the rest - is made up of several common ingredients. In virtually every field the focal point for teachers and students alike is an instructional materials package: textbook or series of textbooks (often paperback), supplementary books, workbooks, teachers' manuals, film strips, films, programed materials, and laboratory experiments where appropriate.

Students often learn about subject-matter through audio-visual media of instruction and whenever possible by directly observing phenomena and the methods of dealing with these phenomena. Many curriculum builders seek to organize their fields around the primary structural elements of each discipline: concepts, key ideas, principles, and modes of inquiry. It is assumed that understanding these elements (rather than merely possessing the facts) gives the student the intellectual power to attack unfamiliar problems and enables him to grasp intuitively the relationship of new phenomena not previously encountered to phenomena already experienced. Ability to think inductively becomes a built-in goal and teachers are encouraged to let students discuss meanings for themselves.

The stress has been almost exclusively on the subject discipline as a separate entity in the curriculum: not science, but biology, chemistry, or physics; not social studies but history, geography, or economics; not English but literature, composition, or grammar. There is a growing trend toward synthesis of subjects, especially in the elementary school, partly because of the difficulties involved in including many academic disciplines (there just cannot be thirty in the kindergarten!) and partly because of a desire to bring together matters that are naturally related.

Space limitations prevent any further description or analysis of what is undoubtedly the most significant and sweeping realm of educational change. There remain many important agenda items for tomorrow: sharper delineation of goals, assessment of priorities among subjects, improved sequences from early to later years of school, improved curricular balance, more attention to individual differences among students, and so on.[14] But one problem for immediate attention stands out sharply: there is a considerable loss of program intent from the time it is conceived by a project staff to the time of classroom instruction. Teachers conditioned to deductive pedagogical procedures do not readily adapt to demands of the new inductive or discovery approaches.

Nonetheless, the rapid evolution taking place in the planned curricula of elementary and secondary education represents a massive response to the explosive accumulation of knowledge, to modern theories of learning, and to new insights into the individual. A school or school system that turns its back on these developments retreats from today, to say nothing of tomorrow.

Instructional Presentation

Telling by teachers and textbooks are the time-honored procedures for presenting the content of learning. They persist, in spite of periodic, determined efforts to lower their status.[15] We are now in a period of unprecedented interest in alternatives to telling and textbooks. Most of these alternatives have been with us in some form for many years, but ideas rarely catch hold only because of their inherent merit. They move into the spotlight because of forces and circumstances which often are external to the arena where the ideas have relevance.

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*Biological Sciences Curriculum Study, Chemical Bond Approach, Elementary Science Study, Physical Science Study Committee, and School Mathematics Study Group.

Forces and circumstances, well summarized elsewhere,[16] are rekindling interest in the manipulative instructional materials of Montessori,[17] the learning by doing of Dewey,[18] teaching machines and programed learning pioneered by Pressey and Skinner,[19] and the audio-visual approaches so long championed by Dale.[20]

The influence of Maria Montessori is evidenced not only in the recent upsurge of so-called Montessori schools across the United States but also in some of the modern approaches to the teaching of mathematics; for example, the use of Cuisenaire rods to teach basic concepts. The Science Curriculum Improvement Study (directed by Robert Karplus of the University of California) and the Elementary Science Study (Educational Services Incorporated) depend heavily on realia that can be observed and manipulated. Children observe and predict the behavior of mealworms, mix solutions, manipulate crabs and salamanders, and so on. Almost all of the new curriculum projects, particularly in mathematics and the sciences, owe a heavy debt to Dewey's "method of discovery," so constantly operative in the Laboratory School of the University of Chicago at the turn of the century, although curriculum innovators seem reluctant to acknowledge this debt. Most of them refer, instead, to Bruner who fails to mention Dewey or otherwise to place his own contribution in the context of its pedagogical antecedents.[21]

Most of the new curriculum projects make some use of programed techniques, more clearly evident in supplementary materials than in basic textbooks. The concepts involved are simple but powerful, reflecting several decades of productive study into the nature of learning. After determining precise goals to be attained, the programer breaks down subject-matter into series of sequential steps or sets. The learner is immediately informed of his success or failure, repeating or progressing according to his response and at his own rate of speed.

An interesting application of programing concepts is found in the Oak Leaf School, a public school serving as a laboratory for the Learning Research and Development Center of the University of Pittsburgh. Teachers, working with specialists from the University, put together programed sequences of instructional materials and exercises from many sources and some of their own creations (especially in science). Students secure instructions from boxes of filed directions, select the next lesson, take series of tests, and proceed at their own rate through segments of the curriculum. Teachers are on hand to assist and teacher aides perform a variety of relatively routine checking and filing tasks. A research staff analyzes the results and makes suggestions for revising the program.

More on the experimental frontier, but still relying heavily on the psychological concepts underlying programing, a handful of centers across the country has extended the teaching machine with the use of computers. The laboratory of the Learning Research and Development Center (University of Pittsburgh) combines computers with a variety of visual and auditory stimuli in experimenting with the teaching of reading, mathematics, spelling, and other fields. One of the most ambitious efforts is that of Suppes (Stanford University) whose Computer-Based Mathematics Instruction Project transmits stimuli and quick feedback on students' responses to neighboring public school classrooms.

The prospect of computers taking over the presentation of subject-matter is of less immediate significance than the insight this experimentation is providing into how to select and arrange stimuli for effective learning and how to deal instructionally with individual differences. The computer, where it exists in public education, is performing relatively mundane tasks of storing and retrieving personnel data, meeting payrolls, and scoring tests.[22]

However, the intriguing prospect of electronic teachers assuming a significant share of instructional presentation rises before us. There is a fallacy, I think, in the common point of view that such robots cannot or should not replace human teachers, but should serve as supplements to or tools of the latter. Such a view will assure us pedagogical dark ages. We have ample evidence to show that teachers, like other workers, do not readily extend their personal powers through mechanization or automation. Automation is introduced by others; the worker adapts or becomes obsolete and is surplused. Witness the large, automated tankers now being introduced in the business of transporting oil. The crew is very much smaller and performs tasks that are quite different from the tasks performed by crew members a decade or two ago.

One can argue that teaching is a distinctively "human" enterprise. True. But experimentation is revealing that human surrogates can do parts of it better. This fact does not exclude human teachers from the teaching-learning process. But it does suggest some radical departures from the telling roles so predominantly assumed by teachers yesterday and today. These observations point again to the need for fully independent experimental schools and research centers where new conditions of instruction are created and studied quite apart from the politics and bureaucratic rigidity of our massive educational enterprise.

The slow adoption of audio-visual instructional procedures provides a case in point. Radio, television, films, film strips, taped lessons, and recordings are no longer innovative. In fact, a generation of today's mature adults grew up in their presence. Encyclopaedia Britannica Educational Corporation has some 800 films and 4000 film strips in its inventory. And yet, the reaction of the education profession to the plethora of instructional riches can be described best as apathetic. Textbook and telling still dominate. We must build our buildings, construct curricula, and educate teachers so that ignoring these instructional alternatives becomes exceedingly difficult.

The long-overdue instructional revolution is now being stirred through the advent of new publishing enterprises: General Learning (a combine of Time-Life, General Electric, and Silver-Burnette), Xerox, Litton Industries, Westinghouse, and others, all of which are committed to instructional packages combining traditional and frontier approaches to the stimulation of learning. The present size and potential of the publishing tide raise many questions pertaining to the determination of curricular and instructional decisions. But it is unlikely that the teaching process will remain secure within its traditional bounds.

School Organization

In 1848, the good people of Quincy, Massachusetts, viewed their new school with enthusiasm, predicting that it would set the pattern for fifty years. They were very conservative. The Quincy Grammar School was graded. And the graded elementary and secondary school still predominates in America today.

By the 1860's, when graded schools in the pattern of Quincy predominated in our cities, voices were being raised against the lock-step rigidity of the system. Before the turn of the century, several experimental deviations from it had been attempted and such illustrious personages as President Harper of Chicago and President Eliot of Harvard were speaking out against conformity and denial of individuality inherent in the graded plan.

Meanwhile, it was being discovered that children of the same age were not capable of equal speed, quantity, and quality of learning. The practices of nonpromotion and, occasionally, skipping were being resorted to in an attempt to adjust individuality to the system. In 1909, Leonard Ayers revealed the additional costs involved in pupil repetition of a grade. Subsequently, a series of studies revealed that nonpromoted, *slow-learning children tend to learn* less than their promoted counterparts. Further, these nonpromoted children are characterized by a greater number of personal and social adjustment problems.

Paralleling this research was growing insight into individual differences. A fourth-grade class, for example, reveals a four-grade spread in average achievement from top to bottom child. Similarly, some children in the fourth grade vary by as much as four years in their subject-to-subject achievement. It was becoming increasingly apparent that the graded system, with its year of anticipated work for each child, simply does not fit the individual intellectual and academic differences characteristic of a class group. It was further evident that extensive use of nonpromotion as an adjustment mechanism complicates rather than resolves problems inherent in the graded school.

In 1939, the Milwaukee school system cautiously embarked on an ungraded primary plan which was not really new in concept but which had not been put into general school use. Grade labels were eliminated and pupils were permitted to take varying lengths of time to complete the work of the first three or four years of school.

The idea could hardly be described as "catching"; by 1955, the writer was able to identify only sixteen school systems in the United States in which schools were to some degree ungraded. But a book published in 1959, coining the word "nongraded," summarizing data on individual differences, analyzing research on nonpromotion in the graded plan, and recommending nongrading for the whole length of schooling, captured the attention of many educators and laymen.[23] During the period from publication of this book to the present, most major cities and thousands of school districts have at least looked seriously at the nongraded plan. A volume published in 1963 spurred interest at the high school level and, recently, educators have begun to see implications of the plan for resolving educational problems stemming from harsh environmental conditions and school integration.[24]

Nongrading eliminates grade levels, is supposed to raise the ceilings and lower the floors of educational expectancy, and promises to correspond with the full range of individual differences in a class group. Presumably, it encourages continuous pupil progress uninhibited by grade barriers; subject matter organized sequentially around fundamental concepts, principles and generalizations; distribution of materials to correspond with the range of individuality represented in the group; alternative group placements for students based on individual pupil diagnosis; and so on.

However, the concepts, form, and nomenclature of grading are not easily swept aside. Even when discussing nongraded possibilities, we still use the language of grading simply because we have not yet developed a nongraded vocabulary. Schools continue with the substance of their old ways even when using the label of an innovation. Consequently, it is not surprising that a recent doctoral dissertation drew the conclusion that very few truly nongraded schools exist in the United States.

The nongraded concept, fully implemented, has profound implications for virtually every aspect of school practice. But many educators have proceeded with what they call nongrading as though a relatively minor organizational change would suffice. Unfortunately, there are few operational models. But the few in existence are visited by thousands of teachers, administrators, and college teachers each year, suggesting that the plan promises solutions to persistent educational problems.

The gaps between concept and implementation and between interest and actuality point once again to the need for experimental and demonstration schools and for in-service teacher education.

Teacher Utilization

A sacred cow of schooling has been the self-contained classroom of elementary education and the teacher-per-class-per-subject of secondary education. The egg-crate school building has supported these practices; in fact, it has inhibited possible alternatives.

A new elementary school building in Lexington, Massachusetts, with an accompanying plan of team teaching,[25] and the so-called Trump Plan for secondary education[26] ushered in an era of innovation in teacher utilization, beginning in the late 1950's. The basic assumptions were that teaching and learning could be carried on more effectively by a team of teachers, aides, and others, planning and working together, and that the profession of teaching could be forwarded by differentiating functions and salaries. The organized teaching profession, especially as represented in the National Education Association, did not take kindly to the notion initially. But endorsement of team teaching as a promising alternative by the Department of Elementary School Principals in 1961,[27] followed by recommendations of the NEA Project on Instruction in 1963,[28] stimulated interest and advanced the movement. A 1966 statement by the powerful National Commission on Teacher Education and Professional Standards[29] left no doubt that the self-contained classroom must yield to the admission of other alternatives for using teacher talent.

The concept is simple but powerful. By thinking of the instructional program for 45, 60, 100, 150 or more students, one immediately is faced with the need to supply more than one person for its planning and execution. One can envision, for example, the instruction of a group of 100 being conducted by two full-time professionals and several aides and assistants; or by three or four full-time teachers; or by a generalist and a host of specialists. Some instruction - in the form of lectures, for example - is appropriate for the entire group. Or, the group can be broken down into a variety of small groups, depending on the purpose and nature of the learning involved.

The plan facilitates the use of teaching specialties; the development of leadership roles for teachers; the use of persons of special competence who are not qualified teachers; the inclusion of clerical aides, student teachers, and interns; and improved opportunities for diagnosing and prescribing for individual learners. The possibilities for teacher education are enormous but have been largely ignored by teacher training institutions. Flexible school buildings facilitate team teaching, but old buildings can be modified and some team teaching can proceed even in our outdated egg crates.

Team teaching is catching on all across the country. It is visible and tangible, thus giving educators some specifics from which to proceed. Nonetheless, progress has been delayed because of the general unavailability of comprehensive models and in-service teacher education.

Miscellaneous

New curricular alternatives, efforts to tailor-make the programs of students (non-grading, advanced placement, and so), increasing size, and other factors have placed burdensome schedule problems upon secondary schools. One answer to this problem is to use short modules of time (often 20 minutes) which can be put together in many combinations and then to schedule each student by computer. Stanford University has been a leader in this development, using its computers to schedule the programs of high school students, semester by semester, who are located hundreds of miles away.[30] One criticism is that the necessity of using computers remote from the school system results in rigidity. This is overcome, however, when school systems or combinations of school systems have their own computer facility.

Designs for new school programs suggest designs for new school buildings. Educational Facilities Laboratories (sponsored and supported by the Ford Foundation) has spurred a nation-wide movement toward more flexible, functional, aesthetic buildings providing open, uncommitted space, instructional materials centers, audio-visual installations, acoustical treatment, and other features. Caution on the part of school boards and schoolmen alike, born of fear of greater cost (largely unfounded) and of conservatism regarding modern architectural design, has slowed the movement dangerously. As a consequence, we still are constructing millions of dollars worth of school buildings that are woefully out of date before the plans are approved. Shortsightedness in this respect may very well represent the most visible failure to spend public money wisely for educational purposes.

Since another paper has been prepared on the subject, I shall sidestep the pressing problems of teacher education. What should be the fountainhead too often is a drainage ditch - and I refer to the whole of the program, not just the much-maligned education courses. In fact, myopic criticism of these courses (some of it justifiable, admittedly) has diverted attention from the fact that nothing short of a complete overhaul will bring to our teacher education programs, both preservice and inservice, the vitality they must have if teachers are to effect the rapid educational evolution we want. In California, the state legislature, seizing a politically popular but superficial remedy, threw out the baby with the bath. Meanwhile, the teacher educators have busied themselves with tinkering designed to satisfy state credential requirements instead of seeking bold, innovative solutions. The problems have been well summarized by Conant and should be reviewed carefully, whether or not we agree on his recommended solutions.[31]

The old local-state-federal configuration of responsibility and authority for education, with its attendant problems and issues, has been compounded in recent years by a host of new configurations. One of these, comprising scholars in the academic disciplines, forward-looking public school systems, the National Science Foundation, and commercial publishers, has given a new look to the curricula of elementary and secondary education. Regional education laboratories, cutting across state lines, have brought public school systems, universities, private educational institutions, state departments of education, and the federal government into a new, experimental relationship. Then, there is a growing number of independent, entrepreneuring educational agencies, the role and impact of which are as yet far from clear: American Institute of Development, Institute for Development of Educational Activities, Institute for Educational Development, Aspen Institute for Humanistic Studies, and many more. Undoubtedly, these new agencies and institutions, created in large part because existing institutions seem not to be meeting emerging demands of our time, will make it increasingly difficult for the older institutions to maintain the status quo and will have a sizeable impact on instruction. The danger, of course, is that these, too, will soon suffer from hardening of the categories, thus giving cause for the creation of still other institutions. The key problem is how to relate new to old configurations, where the political responsibility lies.

During the past six years, the writer has conducted or participated in nation-wide analyses of curriculum, school organization, teacher education, and instruction. The subsequent section of this paper summarizes certain conclusions from our current survey of the what and how of schooling. Four broad conclusions from these studies appear warranted:

First, the number of promising innovations to emerge during the past so-called revolutionary decade in American education is small. Second, these few appear to be relatively powerful in concept and, if thoroughly implemented, could have a sweeping impact on our schools. Third, with the exception of curriculum, the impact has been not nearly commensurate with the general talk and image of revolutionary change. Even in curriculum, the gulf between the intent of new projects and their implementation in the classroom is formidable. Fourth, the change effort appears to be disparate and unmanaged. A composite of unshackling innovations has been brought into meaningful unity only in a handful of schools or school systems. There are few schools, then, in which a full complement of innovations has come about in composite.

IV. INSTRUCTION IN OUR SCHOOLS

In all of the current talk about what our schools should do, there has been little appraisal of where our schools are. Conant's visits to junior and senior high schools sought primarily to identify examplar practices from which generalizations and recommendations might be made.[32] Mayer's nation-wide sampling of opinions and school practices gave us journalistic impressions and provided intriguing generalizations.[33] But a comprehensive inventory remains to be taken.

In 1965, the writer and several associates designed a study into the what and how of classroom instruction in the early school years (kindergarten through fourth grade) with some extension into the upper elementary grades. We are now preparing a report to the Fund for the Advancement of Education of the Ford Foundation which financed the study. During the first five months of 1966, staff members of University Elementary School, U. C. L. A., visited 158 classrooms in 62 schools to gather data pertaining to categories set forth by the research staff. The schools visited are in or near large cities in the following states: Florida, Missouri, Illinois, Utah, Pennsylvania, Texas, New York, Oregon, California, Massachusetts, Tennessee, Michigan, Maryland, Colorado, Arizona, and New Mexico.

Whereas the Contant studies sought "good schools," our study concerned itself with "average" or standard schools. A supplementary part of the study concentrated on educational provisions for disadvantaged children; another on innovative schools and practices. Although observers concentrated on the early years, some incidental and other evidence leads us to believe that what we found here probably is not too unlike what would be found in later school years. Subsequent pages summarize some preliminary generalizations; the data are still under analysis.

In October, 1966, with financial assistance from the State Committee on Public Education, a group of observers made quick visits to schools in California identified as imaginative or innovative to determine how the data collected from such schools (elementary and secondary) compared with the nation-wide picture of ordinary or average schools. Generalizations are stated following a brief summary of the national scene.

The National Scene (K-4)

The schools visited had an average enrollment of 669 pupils, with a range of 130 to 1,850. Average class size was 28. Thirty-eight of the 62 schools had access to music specialists; 33 to psychological services; 31 to physical education specialists; 23 to full- or part-time librarians; 21 to medical services; 20 to specialists in speech; 19 to remedial reading specialists; 16 to specialists in mathematics, science, or social studies; five had access to teacher aides, and two to special personnel in teacher education. It would appear that these largely urban and suburban schools had supplementary resources somewhat in excess of those generally available.

Thirty-five received some kind of supplementary federal aid. Six received some support from philanthropic organizations. The average age of the school plant was 25 years. The average teaching experience of the teachers was 12 years; teachers had taught their present grade assignment an average of 7.5 years. Teachers spent an average of nine hours per week on paper work and three hours on administrative activities, for an average work week of at least 40 hours, exclusive of lesson prepartion conducted at home.

The most influential source of the curriculum was some kind of guide prepared at the local, county, or state level. Most teachers felt that they had some flexibility (frequently a great deal) in adapting the curriculum to local and pupil needs.

The instructional process in the classroom was characterized by much talking, with the teacher in the dominant telling or questioning role. In fact, the teacher question was the primary technique of instruction. The usual interchange was teacher to child and back to teacher again, with little pupil to pupil interchange. When films, film strips, tapes, and demonstrations were used, discussions involving extensive pupil to pupil exchange usually ensued, but these techniques were little in evidence. The range of instructional techniques in this sample of 158 teachers was narrow and restricted.

The curriculum of these first five years of school (K - 4) was dominated by the language arts: writing, spelling, and reading, with heavy emphasis on phonics. The class almost always was organized into groups (usually three) for reading, with groupings determined from estimates of achievement in the subject. Mathematics ranked second in emphasis. The relatively low position of science, social studies, and the fine arts suggests imbalance in the curriculum.

In general, teachers and children were moderately but not enthusiastically and spontaneously involved in their tasks. Classes were organized; teachers and pupils were busy; there were few distractions (the presence of a visitor may have influenced this); and most of the children seemed able to do the work. But deep commitment, excitement, and exuberance were little in evidence. And, certainly, few classes could be described as characterized by humor and spontaneous joy or fun.

On the other hand, the teachers were generally warm toward and supportive of their children. They sought to create a positive atmosphere for children. But the learning fare itself and the "telling" techniques surrounding it appeared to dull this atmosphere. However, our findings support the conclusion that most teachers like children and that recent reports of sadistic teacher behavior probably are relatively isolated and overplayed.

The teaching and learning observed clearly emphasized lower cognitive processes. The higher levels of cognition involve processes of application, synthesis, and evaluation in students. But these intellectual skills were not being stressed; the emphasis was primarily recall or recognition of specific facts and generalizations. The use of inductive or discovery approaches, stressed in the new curriculum projects, was extremely rare in the classrooms visited. This finding confirms our conclusions in another study just completed.[34]

There appeared to be very little pedagogical use of basic psychological principles such as motivation and reinforcement. In fact, during pilot stages of the study we set out to identify use of goal-setting, motivational, and evaluative instructional techniques but subsequently abandoned these categories because of apparent paucity of use. It would appear that modern insights into the behavioral sciences are not in general finding their way into classroom practice.

There was very little evidence of differentiated techniques, timing, or content to recognize diagnosed individual differences among pupils. Except in reading, books and workbooks were usually employed on a total class basis. And even in reading, the range of materials did not nearly correspond to the range of individual differences in a class group as summarized earlier in this report. Even in classroom questioning, the children most ready and best able to respond enjoyed most of the participation, those needing it most responding least. In spite of our concern with and supposed emphasis on individual differences among children, this remains one of our most neglected areas of instruction.

Teaching and learning proceeded at what appeared to be a reasonably relaxed and comfortable pace. One did not get an impression of pressure and tension. This evidence adds to the data regarding the positive, supportive atmosphere of the classroom. On the other hand, it increases uneasiness regarding provision for individual differences. This relaxed pace may be too quick for some and too slow for others.

The kindergarten rooms, more than any others, provided a variety of activities and achieved greater involvement on the part of children. Children often worked independently alone, in pairs, or in small groups. They moved rather freely about the room, varying their activities according to preference and with little teacher direction. Toys, blocks, and manipulative materials were in evidence and the children frequently participated in both planning and evaluating the learning enterprise.

Involvement, independent learning, choice, movement, and range of materials were markedly reduced in the grades above kindergarten. In the first grade, the program was more academic in nature and became even more so with each successive year. By the third and fourth grades, we found little deviation from what must be described as a purely academic program. The preponderance of the language arts persisted. Apparently, once children are in the first grade, they are "in school"; an academic atmosphere prevails; certain "school" traditions and mores take over. Interestingly, there is some evidence to show that kindergarten teachers are unlike their colleagues in all upper grades (but quite like physical education, industrial arts, and home economics teachers) in what they value most in children.[35]

Above the kindergarten, textbooks dominated as the materials of instruction. Textbooks became the fare for more and more subjects as children moved upward through the grades. Children in all grades made use of story books for both school and home independent reading. There were few reference books other than those used by teachers. Programed materials were almost non-existent.

The practice of children sitting at tables in the first grades increasingly was replaced in the upper grades by children sitting in desks arranged in rows. Is this increasing immobility the cause or a reflection of an increasing academic emphasis and a decreasing involvement of children in planning and discussing their work?

There appeared to be some interesting increases and decreases in practices with upward progression through the grades. Evidence of globes and audio-visual equipment increased with the grade level. Incidentally, direct evidence of availability of phonographs and records, tape recorders, projectors, maps, globes, and audio-visual equipment was at some variance with evidence of use. These devices did not enter markedly into instruction. Variety of art supplies decreased in the upper grades, as did availability of pianos, rhythm instruments, and flannel or magnetic boards. Chalkboard space increased above the kindergarten. The relationship between bulletin board displays and the ongoing program seemed to increase with the grade level.

Graded and self-contained patterns of classroom organization prevailed. There was evidence of team teaching in 12 schools. Although the principals of 19 schools reported nongrading, our observers were hard pressed to find evidence of nongrading. For the most part, teachers taught a common grade-level body of content for all, with very little grouping for individual differences except in reading. Even here, however, the grouping patterns were based on achievement rather than special reading problems, and the range of materials provided was limited.

Classroom practices for supposedly disadvantaged children were not markedly different from classroom practices generally. This generalization is particularly applicable to the Mexican-American school population of the southwest states. Analysis of these data is still underway. Clearly, however, the school emphases deemed desirable by students of these children were not visible in our study.

Our observers had difficulty getting data pertaining to sources of curricula. As stated above, textbooks and guides prepared at local, county, or state levels largely determined the instructional program. Although many teachers reported a comfortable amount of freedom to deviate, a general sameness of content across the country suggests that, if such freedom exists, it is not often exercised.

We did not seek to differentiate one school from another or practices in one section of the country from practices in another. Our evidence suggests similarity rather than marked differences nation-wide. However, schools did differ one from another in tone and atmosphere. The differences were subtle and, we suspect, may depend on such variables as long-standing community mores or the personality and leadership style of the principal. But analysis of school-to-school differences and related factors is another study.

Although a sameness in the what and how of teaching seems to prevail, this generalization obscures teacher-to-teacher differences. Again, these differences were subtle; altertness, a sense of humor, the ability to articulate or explain, compassion, or some other personality variability can enliven dull fare and even the telling-questioning approach to teaching.

We must not allow ourselves to conclude, however, that "it all depends on the teacher," or that getting better teachers will rejuvenate our schools. Tired institutions absorb good teachers, often with little visible signs of change. And it is our schools, I think, not our teachers, that are tired.

The California Scene (K - 12)

The national survey reported above included a substantial number of California schools. Nothing in our data suggests that instruction in the first five years of California's schools is markedly different from schools elsewhere. In fact, because of the rapidly increasing population of this state and the high pupil-teacher ratio (California ranks near the bottom in this regard), one would not expect to find California at the top in its instructional practices. The climate, permitting children to enjoy the outdoors all year long, and buildings often designed to take advantage of this climate do contribute to a pleasant school atmosphere, however.

For purposes of this study, the writer and his associates attempted a quick survey of selected schools in California. An inquiry to the State Department of Education revealed that neither this office nor any other gathers the data needed for appraising the present status and future needs of our educational system. We decided, therefore, to seek data on selected school districts considered to be innovative, the best source of such data being the offices of county superintendents of schools. From an initial list of 81 school districts in 13 counties representing both urban and rural areas, we selected 31 on the basis of further evidence regarding innovative practices. The rationale here was that these school districts were likely to reveal the best, and therefore, might suggest state-wide shortcomings to the extent that they were found lacking. Subsequently, the staff visited 75 classrooms in 20 unified, 9 elementary, and 2 high school districts.

The conclusions regarding the what and how of teaching we have drawn from our admittedly limited sample are surprisingly similar to those drawn from the national study. However, we did find a growing momentum for change and promising beginnings along the innovative lines identified in Section III of this report. Also, we found encouraging enthusiasm among the teachers in those districts where clear commitments to and progress toward change had been made.

It should be understood that the generalizations stated below apply strictly to what our staff observed in the sample of 75 classrooms described above.

First, the curriculum is determined almost exclusively by state, county, and local guides and state adopted textbooks. There appear to be more alternatives at the secondary than at the elementary level. Our evidence suggests that current practices regarding state adoption of texts is restricting innovation and creativity designed to meet local needs. School districts require a wider range of instructional materials for which they may legitimately spend allocations of funds.

Second, there is a discrepancy between principals' stated existence of educational aims and the apparent awareness of objectives on the part of teachers. Most of the principals at the elementary level and all at the secondary level report that the educational aims have been stated. If this is the case, the situation in these schools is markedly different from that of schools in the Middle West, for example.[36] Generally, in the classrooms, however, we were unable to distinguish a set of goals apart from covering the work of the courses of study or textbooks. This coverage appeared to be an end in itself rather than a means for achieving more significant goals.

Third, there is an imbalance in the curriculum, corresponding generally to the imbalance observed in our national survey. The requirement that at least 50 per cent of the time be devoted to "skill subjects," leaving art, music, science, and other subjects to the discretion of local districts, has contributed to widespread neglect of the arts. The effort to reduce primary class enrolment from 33 to 30 has compounded the problem because the added costs frequently are made up through elimination of arts specialists. A hodge-podge of state curriculum mandates, without due regard to the most appropriate responsibilities of state and local school authorities, respectively, seems to have an ultimately stultifying effect on the curriculum.

Fourth, telling by teachers and reading from textbooks constitute the primary methods of presenting content to students. The general absence of inquiry and induction make conspicuous the few existing examples to the contrary. Programed materials for presentation are in limited use, the chief examples being in reading at the elementary level and English at the secondary.

Fifth, teacher presentation tends to be to a total class group. Similarly, subsequent discussion and follow-up activities tend to be for all, with little differentiation for individual differences. Individualization of instruction rarely provides for differentiated rates of speed, let alone differing assignments; it consists of teachers' providing individual help to children having problems with the work. Opportunities for doing this are limited, given present patterns of organizing classrooms.

Sixth, there is a marked contrast between the teachers' perceptions of providing for individual differences and our observers' perceptions of such provision. Our staff saw primarily total class assignments, with individualization being almost entirely some subsequent small-group discussion and independent follow-up. Even in the few team teaching situations, class groupings tended to be along achievement lines; group size rarely varied according to some identified purpose. Admittedly, we did see a few valiant attempts to provide for independent study, particularly at the secondary level. But, in general, the teachers we interviewed perceive that there is now considerable provisions for students to work at different levels, with differentiated instructional materials, and with a variety of approaches to learning. This was definitely not our perception.

Seventh, high school teachers frequently expressed concern over the inability of a large proportion of students to use independent study opportunities wisely. Our interviews suggest that only about 30 per cent of the student body is able to proceed comfortably and capably with independent study. These students are enthusiastic about their freedom. But the remaining students apparently do not know how to study individually and independently; they do not know how to use their freedom productively. Clearly, they have had little experience with it. The telling procedures of the school do not prepare them for techniques of self-propelled learning. Students are not learning how to learn.

Most elementary schools in California group students heterogeneously in graded, self-contained classrooms. However, in many schools visited, there is intent to nongrade or already some progress toward nongrading. The nature of this "nongrading" is described following this summary of practices.

These schools are rather well provided with instructional materials, although state-approved texts dominate in actual practice. Increased funds from supplementary sources have aided in securing materials not provided by the state. But teachers are not satisfied that the kinds and varieties of instructional materials are adequate for effecting individualized instruction. The fact that all but five of the schools visited possess libraries is unusual and significant. However, most principals feel that their libraries are inadequate. All but two schools have access to a curriculum materials center in the district or county from which are obtained films, filmstrips, and enrichment materials.

The generalizations stated above correspond closely to the generalizations in the first half of this section regarding the national scene. There is a nationwide sameness regarding the means of presenting content to students, grouping for instruction, selecting instructional materials, providing for individual differences, and so on. Strangely, this sameness in the what and how of teaching is not markedly broken in schools that are considered to be somewhat more innovative than most. The cutting edge of change is blunted, apparently, on the classroom door.

As would be expected, we found more evidence of the educational changes summarized in Section III in the California schools; they were selected because of their innovative propensities: nongrading, team teaching, flexible (sometimes computer-based) scheduling, and so on. However, these innovations were not commonly accompanied by clear insight into what they are designed to accomplish. Consequently, they often were conducted mechanically. Nongrading, for example, more often than not provided a system of arbitrary reading levels, more arbitrary and demanding than the grades they replaced. Similarly, team teaching seemed often to be mechanistic and not adequately adaptable to a range of changing instructional purposes. Too frequently, the innovations appeared "stuck on" rather than woven into the fabric of the school.

Nevertheless, there seemed to be more teacher enthusiasm in schools launching newer organizational and instructional programs, an enthusiasm generally shared by the principals. They see in some of the changes described in Section III opportunities for greater flexibility in the school environment and for more control over conditions affecting their lives and the lives of children in school. Perhaps the changes are too embryonic and simply need more time to spread throughout the entire enterprise.

Interestingly, the eight districts appearing to us to have effected rather widespread change are relatively small. Each has a superintendent or right-hand status leader (assistant superintendent or director of curriculum) who is himself involved in curriculum development and instructional improvement and who has much face-to-face association with staff members. Likewise, the principals involve themselves in instructional matters, often assuming leadership for projects in their schools. The teachers in these systems displayed more enthusiasm and appeared to be performing at a higher level than generally prevails. There probably are some important lessons to be learned through intensive study of these forward-looking school systems.

I find the data and impressions to be puzzling and disturbing. Many teachers appear to be dedicated, sometimes eager, in their attitudes toward children and teaching. The values which they verbalize are not too different from the values stated in Section II. They are concerned about providing for individual differences, promoting inquiry, encouraging self-propelled learning, making school tasks meaningful, and so on. Many even seem to think that all of these values are being rather well promoted. One can conclude either that teachers are not prepared to perform adequately in the ways recommended for modern educators or that something in the total school setting inhibits development of the learning environment we like to envision. No doubt, both and some additional factors are operative.

V. CONCLUSIONS AND RECOMMENDATIONS

What does one conclude from all of this about next steps toward the improvement of instruction in California's schools? By now, certain pet solutions will have flashed through the mind of each reader: increased local control, further consolidation of school districts, more specification from the state, elimination of those dratted education courses, more supervisors, more money, more phonics, and on and on. But no one of these will suffice; some of them would be harmful; and some would offset others. The most difficult part of this report is upon me.

My problem now is to put together assumptions stated at the outset (Section II), the data presented (which, lacking any other, I must assume to be reasonably accurate), and certain practical realities, in coming up with both immediately and ultimately applicable conclusions and recommendations. To follow the inter-relating of all of these requires some broad leaps and considerable patience on the part of the reader because what I have presented so far does not represent all of my working materials. There is the matter of more than a quarter of a century of experience and study in education, which I cannot escape and which colors my every statement.

Three predilections formulated from the foregoing foretell what follows. First, if truly fundamental changes in the what and how of teaching are to be effected, change must enter into every aspect of the educational enterprise; it must pervade the whole school. No single innovation, however powerful and well conceived, will suffice. Second, part of this comprehensive change process must be deliberately planned and injected into the school environment (on a pilot, experimental basis) without waiting for those who traditionally support or conduct schooling. This suggests the need for educational centers, with schools, that are free and set apart from the regular, conventional educational enterprise, but charged with this special responsibility. Third, the school is very tired.

Today, education is conducted through many media. But we have not re-examined school function. Although the conduct of education and especially the clientele have changed since the beginning of this century, the school is perceived very much as it was then: a partitioned box where boys and girls come to sit still for six hours a day, and to be told about some fragmentary pieces of "knowledge" thought to reflect the rudiments of their "culture." This image must be shattered, violently if necessary - and forever. The future of mankind may rest upon it.

I hope that I am able to write now without putting the reader on the defensive be he legislator, board member, taxpayer, school administrator, principal, teacher, or teacher educator. We are all involved and responsible - I, too, more than most, as taxpayer, administrator, and teacher educator. We are not in elementary and secondary education (and certainly not in higher education!) doing nearly as well as we should. And, disturbingly, this realization comes at a time when we think that we are doing somewhat better than we are and, indeed, when we have been making more than ordinary effort. But the follies, rigidities, and educational miscarriages of the past have caught up with us at a time when the vicissitudes of the present and uncertainties of the future seem to be outstripping man's capacities to cope with them.

What follows must be encompassed in composite. Otherwise, we slip back again into the impotence of fragmentation and partial answers which are no answers at all. In some instances, suggestions and recommendations are approximately repeated in different context, sometimes for emphasis and sometimes to stress their inter-related nature. I apologize for infringing upon the topics covered in other position papers but this, too, seems necessary if the whole of what is needed is to be perceived. The conclusions and recommendations summarized below should not be considered complete. They deal only with selected matters considered by me to be of critical importance.

Teachers: Their Preparation and Self-Renewal

The all-too-common condition of instruction in the classrooms can be summarized briefly as follows: telling by teachers; domination of textbooks; total group procedures; little differentiation in the what and how to take account of individual differences; a gap between the recommendations of new curriculum projects for inductive processes and the actual use of deductive procedures; little use of audio-visual and manipulative materials; and so on. These liabilities are to some degree offset by the warm, supportive atmosphere often created by teachers and their considerable empathy with students, especially in the early years. And, of course, there are many instances of teachers doing exciting, imaginative work.

The observer is less impressed or depressed by what the teacher is or is not doing than he is concerned about the total setting: the school and its internal and external machinery. Nonetheless, teachers and their preparation must be examined as part of the whole. The fact that they view ongoing instruction through glasses that are somewhat rose-tinted is significant data.

One is forced to conclude that teachers' preparation in the newer concepts and methodologies of their fields but especially in educational thought, the nature of human behavior, and pedagogy is inadequate. Apparently, they do not possess the professional lore necessary for translating their fields to the needs of young learners; consequently, they become textbook-bound. Whether or not teaching is a profession is a rhetorical question and of little import here. The central point is that few teachers are professionals in the classical sense, probably because of our generally casual or cavalier attitudes towards what it takes to teach.

Certain curricular aspects of the problem are readily visible. In general, students in college are not brought into the inquiring, speculative processes of the scholar.

They do not experience what those who plan to become teachers are now expected to display for and encourage in their own students. The curricular and instructional models being perceived in college by future teachers could not be described as exemplar!

Further, their very few education courses are scattered, spread across a bewildering range of human affairs, largely divorced from the ongoing affairs of real classrooms, and conducted within a context of low (if not punitive) collegiate status which does not contribute to self-esteem and professional pride.

We have long suspected that the classroom setting and supervising teacher encountered by the prospective teacher do most to "fix" the latter's teaching style. And yet, this supervising teacher usually enjoys only a peripheral relationship to the rest of the preparation program and knows little about the program's goals. College and University customs, if not rules, tend to exclude the practitioner from meaningful participation in campus decisions about teacher education, some notable examples to the contrary notwithstanding.

We have before us the sour fruits of our myopic prejudice regarding anything in college carrying the label "Education."* When the well-known Flexner Report (1910) on medical education appeared, medical courses were not legislated out of existence. Instead, weak schools of medicine that lacked the staff to nourish effective programs were abolished and others were drastically reorganized.

Our cavalier attitude toward what it takes to teach is nowhere better illustrated than in our preparation of elementary school teachers. We expect these teachers to teach children to read. A depth analysis of 35 institutions of higher learning four years ago revealed that their teacher education programs devoted an average of only 2.5 semester hours to preparation in the teaching of reading.[37] This is grossly inadequate, be the emphasis on phonics, letter configuration,or some other method.** One cannot teach teachers to teach reading by any method within such a limited time span.

In observing pre-service teacher education, one is forced to conclude, also, that the cards are stacked against developing professional attitudes and life-long commitment. For men, participation in the teacher education program ranks low in campus prestige. Many professors ridicule the education courses and usually succeed in persuading their best students to follow other careers (while, too often,incongruously criticizing the lower schools and their products!). For many women, a teaching credential is only an insurance policy or, at most, the key to a brief span of employment prior to marriage.* A large proportion of all those who prepare to teach does not teach; and, of those who begin, from 40 to 70 per cent, depending on level and field, drop out within three years. Argue that many will return after raising a family, if you will, but they still must be retrained.

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* Let it be clearly understood that I am a long-term critic of the conduct of Education courses and schools of education, a statement that can be readily documented from the literature. *However, I believe that the vituperative, ill-informed rejection* of virtually all Education courses and educationists has done almost irreparable harm to the conduct of schooling and to teaching as a vocation.

** Recent, well-publicized exchanges between State Board Chairman Braden and State Superintendent Rafferty threw no light on the problems of poor readers in our schools. In fact, the conduct of such a debate at this political level only tends to stimulate the California propensity for legislating matters that should not be legislated. And legislating how reading is to be taught is akin to legislating that natural scientists are to teach that the smallest unit of matter is a molecule. Useful answers to reading problems in the schools are more likely to be found from analyses of teacher education programs, of existing instructional resources and of patterns for organizing classrooms, and especially from clear-cut determination of what successive levels of schooling are for.

A serious deficiency in teacher education is that the abstract and the concrete are virtually divorced from each other in the curriculum. Future teachers rarely see and analyze actual teaching, let alone their own. And, with a few exceptions, they enter classrooms infrequently and as observers until they come to grips with student teaching, that sacred cow. Then, finally, ill-prepared and with butterflies in their tummies, they are on their own to sink or swim - all, all alone with thirty youngsters, under the scrutiny of colleagues and sixty parents in the goldfish bowl that the American school is become. Are we asking the impossible of our teachers?

This halting newcomer lives in a cell from morning through afternoon - with thirty children all day long or with five or six transient classes of adolescents - assuming the same load as his colleagues and having little intellectual discourse with them. He looks forward to a salary that ultimately will be only about 50 per cent more than his beginning salary and which will be most disproportionately inadequate at about the time his family responsibilities will be greatest. Is this the way to develop a profession?

Tribal customs decree that the experienced female teacher who marries and who would like to devote, say, half of her time to teaching may not do so. She must work a full load like everyone else and draw the same salary as everyone else, although a humanitarian principal may close his eyes from time to time when family matters interfere with faculty meetings and committee work.

The male teacher frequently sees his financial salvation in the principalship (even if he would prefer to be a math teacher) and spends his summers in university work directed toward this end. As a consequence, well over 50 per cent of all male teachers enrolled in graduate programs in education are specializing in school administration rather than in pedagogy or the subject they now teach. A relatively small proportion becomes principals. But almost all secure salary increments, presumably for improving their teaching effectiveness.

When one thinks long and hard about our expectations for education - and especially about what we expect education to do for all mankind - and then begins to reflect on our laissez-faire attitudes and habits toward teachers and teaching, our petty quibbling and our myopic preoccupation with picayunish details at the periphery of the enterprise, one could easily build himself up into a towering rage.

RECOMMENDATION ONE: At least one institution of higher learning in the State of California should be encouraged (with appropriate financial inducements) to develop a completely re-thought, seven-year program for young people seriously committing themselves to a teaching career. I am not proposing here just one more re-thinking of the professional courses for teachers. Instead, I am proposing a complete overhaul of the college curriculum with the demands of teaching in pre-collegiate schools as the guiding goals. In fact, the ideal of a well-educated, professionally competent elementary school teacher might provide collegiate curriculum planning with the clear-cut behavioral goals and vigorous relationship between ends and means that have long been needed for higher education generally.

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*A few years ago, all but one or two of 28 campus beauty queens at U. C. L. A. were in the School of Education. Now, I certainly am not averse to beauty in the classroom. But these young ladies were far more interested in marriage than a teaching career. To think or act as though we could build a profession of teaching upon them is preposterous, if not ludicrous.

The need in general education is to get students involved in data, with the material, using techniques of the scholars - in effect, in curriculum and instruction reflecting recent recommendations for elementary and secondary education. Few reviewers of Conant's recommendations for teacher education appear to be aware of the fact that he was as critical of the four-year college generally as he was of teacher education per se.[38]

Students would be selected, in part, because of commitment to and likelihood of remaining in teaching. As a consequence, commitments to them would be for a seven-year period, for reasons that will become clearer below, partly as an inducement to enter. Preference in this experimental program would be given to males, other things being equal, simply because their marriage does not as frequently result in loss to teaching.

I am not proposing that future teachers be separated from other college students for special, four-year programs. Instead, I am proposing to use the unique general, special, and professional education needs of future teachers as guide and stimulus for reforming our outworn tradition-bound programs of higher education. And I am assuming that subsequent recommendations regarding the education of teachers would be built into the programs developed.

RECOMMENDATION TWO: The courses deliberately designed to introduce the future teacher to the teaching process should include analysis of films showing actual teaching and videotapes of the students' own teaching.* The analyses of segments of teaching (macro-teaching) introduced by Professors Bush and Allen at Stanford and the analyses of prospective junior college teachers' own videotaped lessons at U. C. L. A. are what I have in mind. Through such media, the application of behavioral science principles can be studied in depth with minimal loss of time. The common practice of taking students to classes is cumbersome and tends to focus attention on the trivial and obvious.

RECOMMENDATION THREE: Early in the program (by the time of the first course on education or teaching) each future teacher should be assigned as an aide to a team of cooperating teachers in a neighboring school. The presence of teaching teams in schools (see recommendations below under School and Classroom Organization) makes possible the inclusion of beginners who assume some teaching tasks from the start and receive small stipends for their work. The relatively small sum needed would be provided by the state.

Present teacher education practices of simply observing in a room are next to worthless, and certainly do not justify the considerable amount of time now directed to planning such visitation. The future teacher must become involved at the outset (if only to discover that teaching is not for him!), gradually growing into full-time responsibility.

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*Ironically, courses on teaching per se have virtually disappeared from the future teacher's curriculum. How can we blame teachers for not doing what their preparation programs did not include? We most certainly are not this short-sighted in nursing, medicine, architecture, or law.

Some teacher preparing institutions will protest that they do not have access to an adequate supply of cooperating teachers. This probably is admission that they simply are not equipped for teacher education at all. It is time that we quit catering to every local demand and give attention to what good teacher education requires. We certainly do not approve medical schools when laboratory-clinical facilities are non-existent. Is teacher education that much less important than medical education?

The chief control over teacher education exercised by the state should be assurance that the proper clinical facilities exist in team-taught classrooms close to the preparing institution. This was one of the most significant, far-reaching, and ignored recommendations set forth by Conant. To avoid political interference, an inspection board representing colleges, universities, public schools, and the state department of education, with staggered terms, probably should be selected.

RECOMMENDATION FOUR: Personnel from the teaching teams in which future teachers are placed should be given rotating term appointments as clinical personnel on the teacher education faculties. Again, this is an ignored recommendation of Conant's The Education of American Teachers. Increasingly and desirably, present faculty members in departments and schools of education will devote themselves to the study of education and teaching. This is as it should be if we are to get the insights and principles basic to a true profession. But teachers must be taught, preferably by people who are close to the relevant knowledge. This calls for a partnership of college and school personnel, a partnership effected through the clinical appointments proposed here. These individuals would not give up public school posts; this would destroy the whole concept. Instead, their load in the teaching-team would be reduced to create the time needed for inducting beginning teachers.

RECOMMENDATION FIVE: The future teacher should move from a four-year period (and the bachelor's degree) emphasizing course work and a modicum of paid clinical experience as aide and intern to a three-year residency period emphasizing clinical experience and a modicum of related course work, the whole culminating in formal acceptance into the teaching profession. Again, the young teacher would be a member of a team of cooperating teachers, assuming steadily increasing responsibility. The salary throughout this three-year period would be markedly lower than it is now. It is not the beginning but, rather, the ending salary that is at fault in teaching. And yet, school systems tend to emphasize the beginning salary as a recruiting device, a practice that may favor local budgets but which endangers the quality of education.

At the end of this three-year residency period, the young teacher would now be ceremoniously inducted into the teaching profession by his colleagues and entitled to all the rights, privileges, and responsibilities thereto appertaining. His salary would be markedly increased; perhaps doubling it would be about right. Clearly, this process would eliminate many "job-seekers" not planning teaching careers, because they could do better financially in other employment during the 3 yr. residency period. It would save from the relatively high salaries now paid to beginners who drop out during the first three years. And the plan would provide worthwhile recognition and rewards for the career-bound.

The functions of this residency period should not be confused with the functions of scholarly, graduate study. That will come later. No, the function is to develop initial competence in and identification with teaching. Remember that the intern is part of a teaching-team which, through its clinical association with the college or university, maintains an academic affiliation and is busily preparing teacher aides. Further, he enjoys a reduced teaching load, leaving time for participation in faculty curriculum planning, special institutes, and so on.

RECOMMENDATION SIX: Once inducted into the profession, the teacher should be employed 10 1/2 to 11 months per year and paid accordingly. This does not mean that the school year for children should be lengthened correspondingly (see Attachment II). Instead the concept of the school-and-teacher year should be completely re-examined, as suggested in a later recommendation. Teachers do not now have the time for thinking, planning, and curriculum development which are essential to a vital school enterprise. Teachers are not up to date on new pedagogical devices and procedures simply because there is so little time away from children and planning for the immediate needs of children. And we cannot expect teachers to be creative in planning new school procedures when they must drag into faculty meetings after six hours of exhausting work with students. Our concept of teacher role is completely outdated.

RECOMMENDATION SEVEN: The present limited use of sabbatical leaves should be extended to teachers state-wide, using policies comparable to those now governing the state college and university system. Such a plan would make possible concentrated periods of study for advanced degrees (again, as recommended by Conant), travel, rest, and other activities essential to the maintenance of an alert, enthusiastic corps of teachers. The sabbatical plan should bear a direct relationship to the teacher's present role and should include preparation for an administrative career only if selection of the individual for this has occurred or is definitely in the offing.

Again, the team teaching plan introduced above and recommended below facilitates sabbatical leaves without undue dislocation and at less cost than otherwise would be the case, as we shall see. The question of cost of this entire "package" consisting of all my recommendations is left to concluding paragraphs of the report.

I must apologize for dwelling so long on teacher education, the topic of another writer. However, improvement of instruction can be effected only in part through direct attack on the classroom itself. The balance will come about through improved and continuing education of the teacher.

The Setting for Teaching

Our visits to schools left us with the discomforting impression that school faculties are made up of individuals who are busily at work in their own teaching tasks; that there is little significant teacher-to-teacher communication; and that schools are not little communities of scholar-teachers. The school setting, as it is now organized, simply is not conducive to a teacher-directed, intellectual enterprise of planning and innovating.

The school year is a rat-race of coverage: up to here by Halloween, halfway down the pike by Christmas, most of the way by Easter, and at least some review by June. The school day means exhausting exposure to the same thirty children in the elementary school or to successions of thirty in the secondary school. There is little time to do more than greet one's colleagues in hallways or faculty lounges (if any). And faculty meetings are a bore.

Many teachers dash off in the late afternoon to classes in the neighboring university but they take different classes and so can have no subsequent meaningful dialogue. Further, they often settle for what is available and the resulting course arrangement lacks pattern and impact. Given these conditions, school administrators are reluctant to impose after-school meetings, even if the union permits.

The setting for teaching and planning needs a thoroughgoing overhaul.

RECOMMENDATION EIGHT: The lengthened teacher year (recommendation six) should be redesigned to provide for individual and faculty planning. There are many ways of doing this and perhaps the state should do nothing more than set minimum requirements and establish some guidelines. For example, the present requirements regarding number of school days per year (which should not now be increased, in my judgment) should be revised so as to state only a minimum number of hours for each student.

At the University Elementary School, for example, we were well aware of the fact that there simply was not time during the year for us to refine our commitments to nongrading, team teaching, and curriculum development. Teachers were becoming increasingly frustrated with snatches of planning together after school on Wednesdays. This year, we are trying an innovation. We have lengthened the school year - but not the number of days children are in attendance - by two weeks. Children come to school for six weeks and then stay home for a few days, then to school for six weeks, and home for a few days; and so on. This gives the teachers the pre-school work they have had traditionally plus two additional weeks for staff and individual planning.

There are many other ways of achieving the same ends. In a visit to to the Far East this November, I encountered the practice of three months of school and then one month off. This also could be adopted to our needs. Also, if all teachers were hired for six additional weeks each year, a short-day summer school (or winter school!) for children might be accompanied by workshops for teachers. The staff would use these special sessions to experiment with and perfect new techniques, to observe and discuss each other's work, to visit other projects, and so on.

I was shocked on coming to U. C. L. A. to discover that my teachers in the laboratory school only occasionally observed each other's teaching and never observed in another school. In one school system with which I am familiar, for a teacher to visit in another school means that he has been placed on probation! Teaching must be one of the most non-communicative, restricted occupations in the Western world.

RECOMMENDATION NINE: The school day must be redesigned to provide teachers with time for planning, previewing films, conferring with colleagues, and so on. When I first came to U. C. L. A. in 1960, I told the staff of the University Elementary School that there would be no need, in a few years, for them to teach (I did not say "work") more than three hours a day. They looked at me in utter disbelief. But the condition I predicted is now come true, although few teachers have yet learned to take full advantage of it. And it costs not a penny more.

The reason, of course, is team teaching which (be patient!) I shall arrive at eventually. Teachers may slip out of a team to prepare for the next lesson, confer with a committee made up of members of several teams, visit with the principal, talk with a parent, or just take a rest. How much more civilized than our present practice of encapsulating students and teachers for hours at a time! And a good deal of responsibility for learning is thrust upon the students where it belongs. Recall the high school experience with independent study and the inability of many students to manage their own learning.

RECOMMENDATION TEN: Local school systems, with state support (perhaps dispersed through the county office of education) must maintain the kind of grassroots in-service education program that provides continuing self-renewal for individual teachers and school faculty groups. Funds made available should be directed at the individual teacher and faculty group: costs of travel to an innovating school or a conference, of a substitute teacher, of certain professional books to facilitate a staff project, of a week-end "retreat" for the faculty of a single school, for securing a consultant to work with the faculty instead of to speak from a remote platform.

Again, this will cost little or no more than present in-service education provisions. But the emphasis is on variety to meet the needs of individual teachers and small groups. Currently, in-service funds are spent on what administrators and supervisors think the teachers should have. I am convinced that complete decentralization of these funds will yield larger dividends in the rejuvenation of teachers.

School and Classroom Organization

The patterns of school and classroom organization prevailing in today's schools are not unlike those prevailing at the turn of the century. My reasons, arguments, and data to support alternatives already have been presented.

The heart of my objection to these prevailing practices is that teachers do not effect the primary conditions pertaining to the schools and classrooms in which they work. In fact, no responsible humans do. The key decisions are made by a system which, until recent years, went unquestioned: the teacher-per-grade-per-class scheme of organization.

To strip away this system is to place significant decisions once more in the hands of human beings: the teachers close to students and, therefore, to the relevant data. Both the system for advancing students upward from entry into until departure from the school and the system for assigning students to teachers come in for re-examination.

RECOMMENDATION ELEVEN: The age-grade system should be redesigned to encourage much greater flexibility in determining what students will be exposed to and how quickly they will move through it. The nongraded plan is recommended as the logically most flexible pattern currently available.

Nongrading permits students of several ages to be grouped together on a temporary or permanent basis. We now know that chronological age is a poor criterion of what a child can learn. Children in upper elementary years keep pace with high school students in Spanish; children in these elementary years learn physical science concepts almost as readily as they are acquired by college freshmen. The grade-placement of subject-matter is part of the over-rated mythology of traditional education.

RECOMMENDATION TWELVE: Cooperative or team teaching patterns should be developed as alternatives to the teacher-per-class plan of elementary education and the teacher-per-class-per-subject plan of secondary education. The possibilities here are almost endless: for including teacher aides, interns, and residents (see teacher education recommendations); for varying the size and membership of instructional groups; for using specialists; for including clerks and parent helpers; for developing leadership talent; for freeing personnel for other educational activities, and so on.

We began at the University Elementary School because a kindergarten teacher informed me early of her pending retirement. Instead of recruiting another teacher, we looked at other alternatives. We could give her colleague 50 pupils and all the money from the other salary for instructional materials, thus providing the most lavishly equipped classroom in the United States (and the most overworked teacher!). Or, we could use the money to employ four part-time people. The continuing kindergarten teacher concluded that she would like to take the entire group but with two assistants employed from the available money. How often do teachers get to make decisions like this? And what educational group is better able to make them?

The plan of cooperative or team teaching has changed each year since, and also has spread throughout the school. In fact, the most difficult problem is that of retaining a few self-contained classrooms as alternatives. And the personnel budget is as it was initially; the money simply is spent differently than before. The University assigns 25 positions to the School but we employ more than 50 people; some full-time, and the rest for various fractions of full-time.

The old teacher education program has disappeared. Now, there are aides, interns, and residents as recommended earlier, all paid and all participating as responsible members of teams.

Criticism of team teaching and nongrading is difficult to comprehend. They simply are alternatives that provide greater flexibility. Teachers who want to continue in self-contained classrooms may do so without interfering with those who wish to team teach, and they may proceed in a graded fashion if they wish. But teachers who are discontented with the old patterns now have an opportunity to try something new, to become rejuvenated in fresh pursuits. The new patterns do not prevent one from proceeding in old ways but they do provide the flexibility for some alternatives. Why should adherence to the old remain standard for all?

The chief problem with these new possibilities is that they require staff planning time and access to working models. Suggestions for creating this time are contained in preceding recommendations. Suggestions for securing models appear in subsequent ones.

The School as a Unit for Change

An earlier observation was that today's proposals for educational change seem not to be entering the total fabric of the school. Perhaps this is because we really do not perceive the school as a viable unit for change. But it has long been my contention that the school, with its community, parents, principal, teachers, and pupils, is the largest organic unit for change.[39] This is the assumption we are now testing through creation of the League of Cooperating Schools in Southern California.

It is the implication of Recommendation Ten that support will be given to each local school to study its needs and to effect certain changes. The natural leader in this effort is the school principal but few principals are adequately prepared for the role.

RECOMMENDATION THIRTEEN: School principals should be selected for their demonstrated understanding of the instructional process and their leadership abilities and then given special training for the role. This is not the present pattern. Men almost always are given preference irrespective of their educational insights. Frequently, especially in the elementary school, they have had rather limited teaching experience, sometimes at the high school level. And their preparation programs have been segmented or not directly focused on the demands of the job. If we want dynamic local schools, we must assure them dynamic leadership.

State and Local Responsibility and Leadership

The respective roles of state and local responsibilities for education require complete re-study. One has only to examine the curriculum bulletins put out by state departments of education to realize that these offices are not at all clear on what they should be doing and how to to be most effective. Similarly, few local school boards assume the responsibility they so often claim they have. And, certainly, neither the state nor local school offices vigorously support innovation and experimentation. A new set of checks and balances is needed.

RECOMMENDATION FOURTEEN: An independent office of school studies should be established for purposes of engaging continuously in the study of how duly constituted educational authorities are performing their roles. The problem of determining respective state-local responsibilities is too complex for quick recommendations here. The matter should be subjected to intensive study by a center divorced from the political structure for education. The state should not legislate how reading or anything else is to be taught but it should devote attention to determining what our schools are for. Because we have not given thoughtful attention to these matters of who is responsible for what curriculum decisions, educational policy tends to be determined from ad hoc legislation.

The task is enormously difficult, as I have discovered from my own long-term effort to classify the decisions of curriculum and instruction and who should make them.[40] It deserves uncontrolled state support of the kind now possible through Title V of P. L. 89 - 10. The staff of a study center should report to a non-partisan citizens' committee such as the present State Committee on Public Education which, in turn, should make recommendations to the state legislature.

RECOMMENDATION FIFTEEN: The State Department of Education should maintain an office for purposes both of projecting educational needs for the state and for continuously collecting data pertaining to the condition of California's schools. One of the most shocking findings of this study is the complete absence of any mechanism by means of which even the simplest facts on instruction in California's schools are maintained. Businesses do not run this way and, I understand, neither do most other government agencies. How can we project and plan for our schools when there is no process for estimating the future? Interestingly, much of the data needed are available across the street from the Department of Education but are not now being sought.

Whether or not an information and appraisal center should be maintained within the State Department of Education is an important question. Certainly, the research function and personnel of that office would have to be upgraded, partly through provision of salaries to attract the right people. Such a center might serve more effectively under private or university auspices but with state support.

RECOMMENDATION SIXTEEN: The State Superintendent of Public Instruction should be an appointed official, recognized for his knowledge and leadership in the field of education. This individual should not spend his time speaking to the local P. T. A. and Chamber of Commerce. Nor should he be running for political office every four years. He should be an educational statesman, divorced from party politics, and selected for the job purely for his educational wisdom, skill, and judgment. The stakes for our children are high and so a salary some $10,000 above what currently prevails would be a good investment. The right kind of person might attract to the supporting offices educators of great ability. At present, it is an open secret that universities do not send their most outstanding doctoral graduates into state departments of education.

Experimentation, Innovation, Implementation

We have seen that mechanisms are needed for systematically determining the appropriate responsibilities of local, state, and federal education agencies. Similarly, we need mechanisms for systematically determining the kinds of human beings to be developed in our schools. Such mechanisms do not now exist in this or any state.

We need, too, mechanisms for appraising the quality of innovations and for systematically determining how a full range of projects might be put together in a single school.

Local school districts are at a loss to know the nature and value of the many new ideas coming to them. Many ideas entering the classroom usually are not subjected to local appraisal.

RECOMMENDATION SEVENTEEN: There should be a research and development center in California devoted to appraising innovations and simulating the possible use of several in a single school. It might put together, for example, a complete curriculum made up of new projects in each field to see what the problems, strengths, and weaknesses seem to be. It would scrutinize new materials and release reports on them. It would not advise local school systems but it would provide them with information. Such a function might be incorporated under a regional laboratory or university-centered research and development center (P. L. 89-10, Title Four).

RECOMMENDATION EIGHTEEN: There should be several independent laboratory schools committed to inquiry, innovation, and research in education. The conditions under which public schools operate make experimentation a virtual impossibility. We need laboratory schools charged with experimental functions that exist only to be on the frontiers. With very few exceptions, our present laboratory schools are not experimental; they exist to fulfill questionable teacher education functions.

True laboratory schools must control their admissions policies and not be subject to state and local school regulations. They exist to be different. One way to effect these conditions is to build such schools in areas of anticipated rapid growth so that parents in the community will not be inconvenienced if their children are not selected for these experimental schools. In this way, parents will have to apply and be subject to school policies of experimentation. Our experience at the University Elementary School suggests that there will be no dearth of applicants. The creation of several experimental laboratory schools is one of our most pressing needs.

RECOMMENDATION NINETEEN: There should be a network of demonstration schools deliberately trying out the ideas developed in the laboratory schools. These should be regular public schools identified for their advanced development of innovative ideas. Thus, they would provide models for other schools. Visitors to laboratory schools too readily dismiss what they see. Instead, they should visit schools very much like their own. The development of innovative ideas is one of the concepts underlying the League of Cooperating Schools (Appendix E) and the new, nation-wide network of demonstration schools being developed under the Institute for Development of Educational Activities.[41]

RECOMMENDATION TWENTY: Automated devices of all kinds should be deliberately built into laboratory schools to remove the question of what happens to teachers under such circumstances from the realm of speculation. Teachers have been slow to adopt innovative instructional devices; for that matter, to use anything other than books and workbooks. This is not unlike other groups of workers who understandably are not on the forefront in suggesting devices that would require changed behavior. Since one of the functions of laboratory schools and their staffs, as proposed here, is innovation, it follows that new devices should be deliberately introduced and tried out. Will teachers automatically take on "more intrinsically human teaching functions" when computers are employed to teach basic skills? I doubt it. They will have to learn new, difficult roles. The staffs of laboratory schools might well be expected to learn these roles and to demonstrate them to teachers in the proposed network of demonstration schools. Here, new devices and new roles for teachers would be demonstrated to the teaching profession at large.

RECOMMENDATION TWENTY-ONE: A system of television hook-ups should link each laboratory school with demonstration schools and demonstration schools in a geographic unit with each other. The common technique for communicating new ideas and practices in schooling is to bring in a consultant-speaker or to visit a school that has made some progress with them. This is inadequate. There are not enough consultants to go around and "to hear the word" is not adequately convincing. Visitation is awkard, is feasible for only a few staff members at a time, and too frequently is unrewarding. But television can bring the work of one school quickly into all the schools linked to it. Accompanying telephone hook-ups permit questions and discussions. All members of one school faculty can view the same practice simultaneously and thus have a common basis for later discussion. The state, perhaps with federal assistance, should finance several laboratory-demonstration school linkages. It would be up to local school districts to arrange for supplementary linkages whereby their schools would be tied into nearby laboratory-demonstration school linkages.

Let me stress that this entire structure proposed for the conduct of innovation, demonstration, and implementation and what goes on in it must be subjected constantly to the sharpest scrutiny. School practices are not necessarily good because they are new. The R. and D. center proposed in recommendation seventeen should examine both the effectiveness of this mechanism from the standpoint of change and communications theory and the progress of ideas through it. Do there appear to be bottlenecks, points from which ideas seem not to move further? Are the concepts guiding innovative ideas at the laboratory school level being distorted as they move into practice at the demonstration school level? These and other questions provide focus for continuing study.

Toward an Informed Educational Dialogue

One has only to chat briefly with most laymen to realize that the average man-on-the-street is sadly ill-informed on educational matters. He views school - both what it is and what it should be - pretty much as he knew it two or more decades ago. There is a near-vacuum with respect to the public's knowledge and understanding of needed advances in schooling. This vacuum presents formidable problems to the administrator who would seek to have a truly forward-looking school.

RECOMMENDATION TWENTY-TWO: A deliberate effort must be made to provide the the general public with information about and analyses of school practices comparable to present reports and analyses of political and economic concerns. Popular magazines and newspapers have increased their coverage of education in recent years. *The Saturday Review*, with financial backing first from the Ford Foundation and then from the Kettering Foundation, has contributed mightily with its monthly *Education Supplement*. But educational reporting has not yet come into its own and present reporting reaches a relatively small audience.

The editorial pages of the *Los Angeles Times* serve as a good example. There are daily political and economic analyses but the only approaches to educational commentary are infrequent statements by Robert M. Hutchins and occasional columns by Max Rafferty. But neither of these comes close to providing the data and dispassionate analyses required for the gradual development of a well-informed public.

The major newspapers of this state should be prevailed upon to carry on their editorial pages daily critiques of "the new schooling," analyses of educational issues, summaries of new practices, and so on, all written by competent persons who have no political aspirations. Through such a step and others, we might ultimately promote an informed dialogue about education.

Clarifying School Function

Several of my observations imply that our schools may very well have lost sight of what they are for and where they are going. I have said that neither local nor state education authorities are assuming responsibility for determining the aims of schooling; that there are both gaps and duplications in the local-state division of responsibility for education; that our schools are tired; and that it is time we paid attention to the kinds of people we should attempt to produce through our educational system.

RECOMMENDATION TWENTY-THREE: We should define precisely the intended functions of each successive three- or four-year period of schooling, each phase being dealt with as an entity in itself. We treat the length and breadth of schooling as though the functions were the same throughout. Consequently, the separate-subject approach to curriculum reform of the past fifteen years has proceeded as though what is good for the high school is good for the elementary school. Actually, there are powerful arguments for combining subjects into broad fields of inquiry that should not be ignored. Perhaps each successive phase of schooling should balance the previous one by being organized and conducted differently. Thus, if separate subjects are to prevail in the high school, perhaps combinations of subjects should prevail in the elementary. At any rate, we should not climb thoughtlessly aboard band-wagons but should seriously think through what is most appropriate for a given period of schooling.

Space prevents elaboration of my concept of defining successive phases of schooling but perhaps an example will suffice. Since I already have criticized the way we approach our reading problems, let me take the first three years of school, excluding kindergarten, as a phase.* I believe that the prime function of this period is to teach certain fundamental approaches to learning and to provide learning tools, specifically skill in reading. This should not be the function of kindergarten or nursery school which, hopefully, will ultimately provide together the first phase of schooling. Nor should the teaching of reading, for example, be the prime function either of the entire elementary school or of the upper elementary years. The job can and should be done during the years of six through eight or nine.

If we accept the teaching of reading as a prime function of these early years and the assumption that the job can be done then, certain instructional provisions follow. First, our evidence about individual differences tells us that children learn at different rates. My organizational answer to these differences is nongrading. And so, some six-year-olds and some eight-year-olds will be working on the same tasks. Teaching all children to read during these few early years will be blocked if all children are required to proceed in the graded lock-step.

Second, individual differences exist, also, in the way children learn. Since they learn differently, they must be taught differently. At present, single approaches to the teaching of reading - whole words, phonics, or some other - tend to prevail. And so, some children do not learn readily. Their reading problems accumulate but are not diagnosed. There is more likelihood of diagnosis and more likelihood of a variety of teaching approaches when a team of teachers works together. And so, team teaching is recommended.

Third, teachers are not well prepared to teach reading by any method (see p. 463). Therefore, it is crucial that at least one member of each team be a reading specialist, thoroughly familiar with a whole range of approaches to the teaching of reading. Most such individuals now available are supervisors or "remedial reading" teachers. They must be brought directly into the classroom "where the children are" as team specialists. In this way, reading problems will be caught and treated when they begin; there will be little or no need for costly remediation. (Again, this has been our experience at the University Elementary School.)

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* The junior high school is, of course, our most conspicuous example of an undefined phase of schooling. We cannot make up our minds whether it is an upward extension of elementary education or a downward extension of secondary.

The central point I am making is that there is no clear basis for educational practice until school function is clear. Then and only then can the appropriate resources be mobilized effectively and efficiently. And then, too, many of the old either-or, highly opinionated, arguments simply fade away. Clearly, from the above, the age-old argument over the best way to teach reading is specious. There is no "best" way in general. Some children prosper with the "whole word" approach; others seem to do best with a heavy emphasis on phonics; the so-called "experience" approach stimulates others. The answer for each child lies in creating an environment in which diagnosis and appropriate prescription occur. Tailor-made instruction is the mode for tomorrow.

VI. POSTSCRIPT

To write anything further probably is to be repetitive. But one central theme of this report bears repetition in the hope that there will be no misunderstanding. It is, simply, that the gap between our best visions for education and the actual conduct of schooling is a product of many factors.

The identification of this gap necessitated a comparison between some assumptions as to what is desired and some recommended practices supporting these assumptions, on one hand, and what appear to be common classroom practices, on the other. This procedure focused attention unduly and unfairly on teachers. But the balance of my report supports the thesis, I believe, that present instructional inadequacies are a consequence of a host of related factors: failure to clarify the mutual responsibilities of state and local education authorities; failure of school boards to determine what the schools over which they preside are for; the incomplete strategies of many proposals for educational change; the fact that each innovation deals with only part of the school; the fact that no agency exists for putting together a number of innovations to see if viable total school programs result; the absence of a structure for developing new ideas, translating them into school innovations, testing and demonstrating these innovations, and disseminating them on a broad scale; and so on. Paralleling these problems and deficiencies are outmoded patterns of school organization, inefficient modes of utilizing teachers, deficiencies in teacher education (particularly in-service), lack of appropriate on-the-job leadership training for principals, and much more. To point the finger, then, at any one group or any one problem over-simplifies and complicates the search for solutions.

In brief, we need not only broad-scale infusion of new practices and ideas but also a structure for planned change that will assure continuous self-renewal.

The inevitable question about educational proposals is, "What will they cost?" Alternative practices need not cost more than the practices they replace. (Our budget at the University Elementary School is approximately what it was in 1960, in spite of the fact that the school has been completely reorganized since then.) In seeking to implement innovations, we always should look for practices to be eliminated; school-keeping should not simply be additive in its attempts to keep up to date. But changes do tend to expose inadequacies that were hidden before. And the elimination of these inadequacies may cost money, but it is money that should have been spent anyway. For example, nongrading has tended to reveal the need for books and other materials for dealing with individual differences.

In general, good practices cost no more than less desirable ones. Of course, the level of good education almost always can be raised through the infusion of more funds. But money of itself will not correct inadequate educational procedures.

The matter of laboratory schools, demonstration schools, television linkages, and centers for educational appraisal is, however, a different proposition. These do not now exist. To create them calls for securing funds for the purpose. But this need not necessitate new monies in the amount of the total outlay called for. Savings can be effected by eliminating certain present approaches to improving schooling that may be much less effective. Further, any present outlay probably will result in savings over a period of years, savings effected through the development of more efficient procedures.

In closing, I must point out once again the almost complete lack of both data pertaining to the conduct of education in this state and procedures for their collection and interpretation. I trust that rectifying this situation will be the first step of many in re-planning elementary and secondary education in California.

John I. Goodlad

January, 1967.

ATTACHMENT I

FOOTNOTES AND REFERENCES

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ATTACHMENT II

THE KNOWLEDGE EXPLOSION AND THE USE OF SCHOOL TIME

John I. Goodlad

University of California, Los Angeles
and
Institute for the Development of Educational Activities

At least four aspects of the knowledge explosion have profound implications for the use of school time. The first is sheer accumulation. The second is rapid change in our ways of viewing and exploring realms of knowledge. Knowledge does not merely pile up but is recast in fresh theoretical constructs. Facts become facts only within the perspective of the viewer. The third is imbalance. The Great Books and the Great Masters are reinterpreted continuously, enriching the experience of those who see and hear them. But the rate of accumulation is far from explosive. Consequently, curriculum planning in art, music, drama, dance, and literature must respond to something other than expanding knowledge or it is not likely to respond at all. And the fourth, particularly relevant to the education of teachers, is growing insight into the processes of learning and the nature of knowing.

The knowledge explosion is only a part, however, of our rapidly changing era, becoming increasingly meaningful for schooling as this larger context is understood. Space limitations permit no more than a listing of some other realities which add urgency to current educational planning.

1. The relationship between low educational attainment and poverty: poverty prevails in two out of three families whose head has completed less than nine years of formal schooling.

2. The relationship between educational attainment and job opportunity: in the last decade, jobs for high school graduates rose by 40 percent while jobs for those who failed to complete high school dropped by 10 percent.

3. The relationship between job opportunity and mobility: our young people are being prepared not for local but for nation-wide and world-wide competition and activity.

4. Growing awareness of the significance of childhood in determining lifelong patterns and of the ability of very young children to engage in formal learning.

5. A rapid shift in the individual-and-society interplay toward developing the individual for his own as well as society's sake. In the words of President Lyndon B. Johnson, "Every child must be encouraged to get as much education as he has the ability to take. We want this for his sake and we want this for his country's sake."

6. A process of shifting and crumbling in values which has long guided American life. A new and growing rationalism rejects inevitable progression toward an ever better society and is oriented toward probabilities rather than certainties.

7. A new faith in knowledge and its processes quite unlike what we frequently have witnessed before. We now expect education to play the major role in eradicating crime and poverty, in assuring the good life for an increasingly larger percentage of the world's population, in raising the level of political responsibility, in expanding the nation's economy, in purifying our streams and the air we breathe, and in assuring peace. We expect education to usher in the Great Society.

The explosion of knowledge, together with growing recognition of the relationship between education and the individual's, the nation's, and the world's well-being, have brought unprecedented attention, criticism, encouragement, and support to educational institutions. And they have created superhuman expectations for educators. Proposals for educational reform giving particular recognition to the knowledge problem call for accomplishing more in available time, for using available time differently--and, hopefully better-- and for increasing the amount of time available for formal education.

Turning to this last first, specific proposals are for a longer school day and a longer school year. More time should ease current subject pressures for a place or a larger place in the curriculum but the exact opposite is likely to occur. Professional and lay lobbies stand ready to move in on whatever additional curricular space is made available. There is no evidence to suggest that previously neglected areas will fare any better than before in the competition. Many children and youth whose personal development is enhanced by out-of-school participation in artistic and recreational pursuits--areas enjoying only indifferent attention in our schools--will be cut off from these extracurricular activities. Large numbers of young people now attending summer sessions voluntarily may be learning there more about self-propelled learning and the love of learning than they have so far learned from the whole of their compulsory schooling.

There are some powerful arguments for a longer day and a longer year. Out-of-school enrichment is almost exclusively the privilege of economically advantaged students who attend the relatively enriched segment of our upside-down school system. The growth of metropolitanism has restricted the out-of-school environment of most young people, particularly the economically disadvantaged, and offers schools unique opportunities to pick up the slack. So many students now attend summer school anyway that we would be well-advised to include these months in the regular school calendar. A school day and year of such length that after-school meetings and summer workshops for teachers would be ruled out might very well force complete rethinking of staff utilization, with time for planning built into the regular day and year and with sabbatical leaves taking the place of summer schools for in-service teacher education.

The acid test of more school time is whether it can be put to better use than is now being made of it out of school. And the key to better use is comprehensive educational rethinking accompanying any and all proposals for extended time: of the curriculum, of school and classroom organization, of teacher utilization, of pedagogy; indeed, of the very ends of education.

Piece-meal, discipline-centered curriculum reform of the past decade represents a response to the knowledge explosion and the growing need to use time better. The subject, from which both ends and means of schooling are now being derived, is to be retained as a separate entity in the school's program. Topics in each field are to be organized around primary structural elements: concepts, key ideas, principles, and modes of inquiry which tend to persist over relatively long periods of time. Understanding these elements is presumed to give the student power--power to attack previously unknown problems and power to grasp intuitively the relationship of new phenomena not previously encountered to phenomena already experienced. Therefore, ability to think inductively becomes a built-in goal; teachers are encouraged to let students discover meanings for themselves. Increasingly, because of this curricular approach, students should be able to cope with a world of expanding knowledge.

The separate-subject approach to curriculum planning is not without its problems. Those subjects traditionally in the high school program, whether or not previously combined with others, and especially when seen as closely related to national welfare (hence mathematics, biology, chemistry, physics, and foreign languages) have received added support. But those previously receiving little or no attention--as economics, law, psychology, political science, anthropology, sociology, and geography, fields which have both changed and expanded rapidly in recent years--now have an even more difficult time in finding a toe-hold. Add to this the facts that curriculum reformers in the well-established fields want extra periods or another year or both, that the position of the arts always has been tenuous, that we are not at all clear on the role of the secondary school in vocational education, and formidable time problems emerge.

The problems of an elementary-school curriculum organized around discrete disciplines are no less troublesome. Since the search at the high-school level has been for root concepts in each field, what of a more basic nature is left for the elementary school? Presumably, these same concepts should be taught at a simpler but, nonetheless, honest level. The search for the beginnings of truly fundamental concepts and for ways of introducing them effectively to the very young has proved both challenging and baffling, separating the men from the boys in curriculum reform.

An equally baffling task has been selection of subjects to be included. Which of the many natural and social sciences, for example, should be chosen as first priorities among all those available? There simply is not room for thirty or more separate academic disciplines. Subjects must be combined, alternated one with another, or placed in an hierarchy of significance.

One possible solution for the choice problem is to select and teach key ideas from a broad realm of knowledge, irrespective of the subjects to which these ideas most closely belong. This approach is likely to characterize at least some future planning in the social studies where the possibility of allocating time to each social science is remote. It is possible to select topics which give attention, at various times, to fundamental concepts such as supply and demand (economics), due process (law), consent of the governed (political science), cultural evolution (anthropology), and so on, without identifying each subject and giving it a place in the curriculum. This approach smacks of the much-maligned broad fields type of curriculum organization practised in the '30's and '40's. But with a critical difference. Scholars in the various academic disciplines were not then involved in the difficult process of identifying in their fields what is worth knowing and teaching at pre-collegiate levels.

Another possibility for taking care of the plethora of subjects struggling for recognition in the curriculum is to identify intellectual processes common to several related disciplines and to teach for them, again without providing a place for all the disciplines represented in a realm of knowledge. This is a significant aspect of Science--A Process Approach for the elementary school, sponsored by the American Association for the Advancement of Science, which is organized around desired behaviors such as the following: observation, classification, recognition and use of space-time relations, recognition and use of numbers and number relations, measurement, communication, inference, and prediction. Shades of John Dewey!

The criticism of both approaches is that they sacrifice the ways of viewing and thinking about knowledge that constitute the very essence of current discipline-centered reform. We are back in the classical either-or curriculum dilemma in which we seem unable to have our cake and eat it, too. Exploding knowledge suggests the need for exposure to breadth. But power to deal significantly with any aspect of the knowledge explosion seems to demand depth.

There is a way out of this dilemma which we have been patently reluctant to follow. Let us assume, first, that there is enough wisdom on each side of the long-standing breadth-depth argument to warrant substantial recognition for both. History supports us in this assumption. We alternate at intervals from thought and practice emphasizing breadth to thought and practice emphasizing depth, with the latter position firmly in the saddle at present. Soon, since change is bound to occur and since change, by definition, is movement away from what exists, there will be a fresh emphasis on general education.

Let us assume, second, that virtually all of our young people will complete high school. Let us think, therefore, of pre-collegiate education in the full sweep from nursery school or kindergarten through the secondary school. And let us remember, too, that children and youth go through distinct phases of development, determined by both biological and environmental factors, even though this development is irregular and markedly different from individual to individual.

Should we not think and plan, therefore, for successive phases of schooling, each with unique and distinctive functions as well as common school functions, and each geared as much as possible to successive phases of human development and societal expectation? Thus, the early childhood phase might devote itself over a period of two or three years to the development of awareness, self-confidence, and habits of thought; a subsequent phase of three or four years to fundamental skills of speaking, reading, and writing; a later phase to significant ideas and modes of thought irrespective of subjects represented; and a still later phase to the strategies of discrete academic disciplines. With phases overlapping each other, a student might be in more than one at once, according to the irregularity of his growth.

The "phases" concept of schooling proposes a cycling of curricular emphases for each individual, adding up to experience in all of them by completion of high school. This is in marked contrast to traditional processes of cycling by generations, in which an individual completely skips a curricular emphasis simply because of when he happens to live.

Our continuing curriculum sin is that we vacillate from excess to excess, with what is currently fashionable in curriculum thought being applied indiscriminantly to the whole of formal education, from nursery school through college. Needed is thorough appraisal of functions thought to be appropriate for each successive phase of schooling; translation of these functions into precise educational objectives, and allocation of human and material resources specifically pertinent to attainment of these objectives. These are tasks for state and local school systems, aided by the research and development centers and regional laboratories now made possible by actions of the 88th and 89th Congress of the United States.

We have no models for this work. Local school districts, which experience the vexing problems of curricular choice most directly, lack the resources for the development of comprehensive curriculum design. State departments of education are not staffed for the job. And even a cursory analysis of the hodge-podge approach to curriculum planning provided by most states reveals that these agencies are not at all clear on their leadership role. The curriculum staffs of colleges and universities, with only a few exceptions, are very weak. They have offered neither ordered, conceptual schemes by means of which curricular problems might be placed in perspective nor research on anything other than minuscule problems. The time is come to rise above parochial considerations in the creation of cooperative approaches to curriculum study and improvement which bring together research, facilities and techniques for field testing, and machinery for implementation across the whole length and breadth of the curriculum.

Subject-by-subject curriculum reform is an important, never-ending enterprise but, by its very nature, it cannot resolve the comprehensive curricular issues involved in using school time wisely. These are the issues to be faced in a second wave of curriculum reform, scarce begun, the issues of planning total curriculums for all the children of all the people.

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